BARRIER ISLANDS ON THE TEXAS COAST:

EXISTING AND FUTURE RECREATIONAL

USE AND DEVELOPMENT

by

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August 1979

TAMU-SG-79-203

Partially Supported through Institutional Grant 04-158-44108
to Texas A&M University
by the National Oceanic and Atmospheric
Administration's Office of Sea Grants
Department of Commerce

$5.00

Order from:

Sea Grant College Program
Texas A&M University
College Station, Texas 77843

ABSTRACT

This report focuses on the recreational use and development of the five major barrier islands along the Texas coast: Galveston Island, Matagorda Island, St. Joseph Island, Mustang Island, and Padre Island. It is of interest to state and local planners, and to private investors.

As human actions frequently influence what takes place beyond natural boundaries of the islands, a regional approach is used. Regions are formed based on prevailing social, economic, and institutional influences which are discussed extensively in this report. The regions identified are Galveston Island, Matagorda Island, St. Joseph Island, Mustang-North Padre Island, Padre Island National Seashore, and South Padre Island.

Examination and analysis of current recreational use and development, along with the factors that enhanced or inhibited this use and development are undertaken for each of the identified regions. This was accomplished through an extensive literature search, personal interviews and on-site reconnaissance through 1977. Changes in the 1977-79 period are discussed in a section titled Update of Recent Developments.

As each regional analysis was completed, summary statements were developed for each region which categorized its relative intensity level of recreational use and development as high, medium, or low based upon identified criteria. Lastly, a scenario for each region was formulated to examine possible recreational conditions in the future.

ACKNOWLEDGEMENTS

A sincere and grateful thanks is given to the many individuals, too numerous to be identified here, that aided in the completion of this effort. The following persons were of particular assistance to us: B. L. DeBerry, P. L. Wilson, and Otto Waring of the Texas Department of Highways and Public Transportation; Jeff Hinkley of the Galveston City Planning Commission; Pete Peltier of the Texas Parks and Wildlife Department; Russ Miget of the Texas A&M Research and Extension Center in Corpus Christi; Superintendent John Turney and his staff at Padre Island National Seashore; South Padre Island Mayor Bill Neukomm and former Mayor John Austin. Funding for the project was provided by the Texas Agricultural Experiment Station and the Sea Grant College Program at Texas A&M University. Appreciation is extended to the referees for their valuable critique, to Dr. Gisela Mahoney of the Sea Grant Program for technical editing, to Beth Breuker and Cheryl Whitley of the Department of Recreation and Parks for the graphics and typing the report, respectively.

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CHAPTER I

INTRODUCTION

Much of the Atlantic and Gulf Coasts is fronted by barrier islands and barrier beaches.[1] Barrier structures are dynamic land features which change shape and location in response to storm action, shore currents, sediment supply, and ocean level. The processes of erosion and deposition are constantly altering the beachfront and foredunes, filling in old inlets, and creating new ones on these islands and beaches.[2]

The barrier structures are characteristically composed of several environmental zones. They are the beach, primary dunes, freshwater sloughs and wetlands, secondary dunes, and backdune-bayshore system (Figure 1).

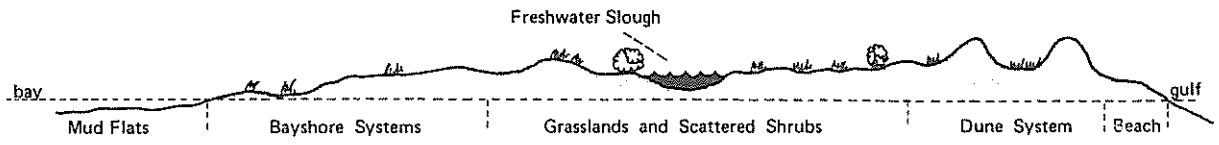


Figure 1 - Cross Section of a Barrier Island

The beach, or active surf zone, originates offshore and extends above the mean high tide line to the first, or primary dune. A sand beach is constantly affected by the size of the waves, the shape of the beach, and a rising sea level due to melting glaciers.[3] Beaches

are characteristically resilient to human activity, although they are constantly changing in response to natural processes and human activities.

The continued existence of a naturally evolving barrier island depends upon the sand dune system. Dunes are an island's main defense against winds and waves, since they store sand to replace that which is displaced by storms. It is the primary dune system directly behind the beach which bears most of the hurricane and storm forces, therefore protecting the estuaries and mainland communities. While the primary dune system absorbs much of the energy created by winds and waves, the secondary dunes provide a second line of defense. Sand dunes of the type found along the Gulf Coast are inherently unstable masses, unless anchored by vegetation.[4]

Critical to the survival of barrier island vegetation is an adequate supply of groundwater below the wetlands and freshwater sloughs. Every barrier island has beneath it a small, shallow "lens" of freshwater floating on the dense saltwater below.[5] It is this combination of water and vegetation that provides the basis for an island's fish and wildlife population.

The bayshore systems located on the backside of barrier islands provide essential habitat for many estuarine animals and supply basic nutrients to coastal ecosystems. These systems also help stabilize the mainland shore, absorb flood waters, and remove contaminants from the water.[6]

The physical components of barrier islands can be generally identified and described. However, by its very nature, each island

is impacted differently by varying intensities of wave action, wind direction and velocity, and available sediment supply. Because of these differences in natural characteristics, each island is distinct in form, physical characteristics, and rate of change. For example, the barrier islands adjacent to Texas are physically separated from the mainland by as much as two miles (3.2 km) of open water. Alternately, the distance separating the islands from the mainland in areas of the Atlantic Coast is narrow and barely discernible due to the lush vegetation between the two land masses. These natural differences suggest a rationale for considering individual management techniques for each island or group of islands.

Barrier islands represent a delicate balance between many naturally occurring processes. They are fragile in the sense that they are easily altered by either natural or human activities. When this fragility is not recognized and considered during development, the eventual outcome is likely to be unexpected and dramatic.

The fragility of barrier islands is especially important considering their attractiveness for a variety of uses, which include port facilities, commercial fishing fleet moorage, second home and resort development, and a host of water- and beach-oriented recreational activities. As a coastal recreation resource they can provide opportunities for seclusion from others in a pristine setting, or for a gathering of people in a social atmosphere.

Each of the ecological zones of a barrier island has a different tolerance to the human use and development that they attract. The beach area is very tolerant to certain uses, such as recreation, but

may be altered by structures, like jetties and groins, which change the natural flow of sediments that replenish the shoreline. The dunes are extremely vulnerable to even low levels of human use. They can be easily penetrated or removed for development purposes, thus increasing storm hazards, as well as damaging the island environment.

Another serious problem is created when shallow wells are used to obtain freshwater supplies on barrier islands. If the groundwater level is lowered, natural vegetation can be destroyed because adequate fresh water is not available. As a result, the stability of an island's sandy masses may be reduced, effectively destroying the qualities that make barrier islands attractive.

The attributes that make barrier islands appealing are the very natural features that are most delicate. It is here where the challenge of enjoying the resource without destroying it provides a unique study in contrast. The problem becomes one of enjoying and utilizing the barrier island resource while at the same time retaining those qualities that are characteristic of the barrier islands. This issue of protecting barrier islands as a resource, while at the same time making them accessible to the public, is one that is receiving increased interest at all levels of government.

The National Interest in Barrier Islands

The national focus on barrier islands as unique resources has been a relatively recent event. In 1966, the Secretary of the Interior directed the U.S. Bureau of Outdoor Recreation to conduct a nationwide study of islands. The purpose of the subsequent report

was: "to alert the Nation to the presence and importance of its islands, to identify conservation opportunities for the various levels of government and the private sector, and to propose a national program for island conservation."[7] The report examined islands of a size ten acres (4.1 ha) or more in and around the United States. As such, it provided only a limited understanding of the significance and importance of barrier islands.

In a more comprehensive inventory coordinated by The Conservation Foundation, 138 barrier islands were identified adjacent to the Atlantic and Gulf Coasts. They included approximately 791,520 acres (320,328 ha) with an estimated 1358 miles (2185 km) of beach front.[8]

The inventory also documented that the ownership patterns and land uses occurring on the barrier islands were extremely diverse. Nearly every possible combination of public and private ownership was found on the islands. In the public sector, Federal, state and local agencies each had control of islands in total or in part. The Federally owned islands were primarily designated as National Seashores, wildlife refuges, or military bases. The state controlled islands included state parks, wildlife refuges, or dredged material deposit areas. In the private sector, the level of development varied from complete urbanization to total protection as private preserves. However, most of the islands under private ownership were at least in a partial state of development.

A 1972 case study of the Bogue Banks of North Carolina brought to national focus the relationship between human development and natural processes on barrier islands.[9] While the concern of the report

focused on the preservation of those ecological systems that still remained undeveloped, the value of the study was the documentation of the basic problems that could be encountered, if private, residential development were to occur unchecked. The important problems discussed included sanitation, dune alteration, storm hazards, property access, and construction cost. The study alerted those unfamiliar with the marine environment to the hazards of barrier island development.

The problems associated with human use of barrier islands are not confined to the private sector. For the past several decades the policy of many Federal land management agencies has been to control or prevent natural processes that were considered to be harmful or destructive. Through experience with sea walls, groins, beach nourishment, and breakwaters, an understanding that natural changes are often essential to the geological and ecological health of coastal systems has been acquired.[10]

For example, during the more than 30 years in which the National Park Service (NPS) has been managing coastal recreation areas, two generalizations have become obvious:

> (1) Management actions designed to control and stabilize the natural modifications of the landscape by marine forces usually result in unexpected side effects that in turn require additional management action.
>
> (2) Management actions to control the landscape have been found to be site-specific. Therefore, procedures that were successful in one location are neither necessarily successful nor do they result in the same side effects when applied elsewhere.[10]

As a result, the NPS has rethought its coastal resources management philosophy and seriously considered the merits of adopting "the policy of managing the seashore to preserve and, where necessary, to permit the evolution of a dominance of the natural forces and the resulting landscapes and ecological scenes."[10] These new management considerations have emphasized the uniqueness of barrier islands as a resource and brought to the Federal level an awareness of the need to develop specific management objectives tailored to the coastal environment.

The national interest in barrier islands came into focus with the convening of a landmark conference, the Barrier Islands Workshop. It was coordinated by The Conservation Foundation and was held in May, 1976, in Annapolis, Maryland, to discuss the future of barrier islands and barrier beaches. The conference reflected the concerns of environmental groups, and was held to identify techniques and alternatives designed to protect and preserve barrier islands.

The goals of the workshop were envisioned to result in four main benefits:

(1) encourage coordination among member organizations preventing duplication and insuring prompt, effective action;

(2) focus national attention on the protection and restoration of the barrier island chain;

(3) stop existing government subsidy to destructive development and encourage a policy of preservation;

(4) provide information on all aspects of barrier island protection to assist the member organizations, and individuals and groups at the local level.[11]

The key objective of the workshop was federal designation of barrier islands as a unique class of resources, so as to benefit from the kind of special treatment that wetlands and floodplains presently receive. A steering committee was identified and charged with the responsibility of formulating a national policy, under a presumption of public interest, to manage the use of high-hazard or high-value, critical areas on barrier islands.

The U.S. Army Corps of Engineers' responsibility relating to dredge and fill permits and the Federal subsidy of barrier island development as carried out by such agencies as the Economic Development Administration, Department of Housing and Urban Development and the Environmental Protection Agency were issues identified at the workshop as having the greatest impact on the use of barrier islands. The need to identify barrier islands and beaches as "areas of particular concern" in state-level resource planning efforts was another goal of the workshop. Perhaps as a result of this type of interest, the Coastal Zone Management Act Amendments of 1976 (P.L. 94-370, 90 Stat. 1073) directed coastal states to include islands within their coastal management plans.[12]

The workshop generally concluded that more information was needed about individual island development patterns and problems, along with alternative solutions to avoid further degredation of the barrier island environment. To accomplish this, a Barrier Island Watch Group consisting of local citizens was initiated with the goal of providing the public with up-to-date information on each barrier island and beach.

The advocacy for conservation and preservation of the barrier islands expressed by the workshop does not represent the position of this paper. However, just as the changing attitude of the NPS toward coastal resources management serves to illustrate the reality of the dynamic nature of these resources, the concerns expressed in the workshop serve as a counter-balance to the piecemeal decision-making that has affected many of the islands in the past. The conclusions of the NPS and the focus of the workshop provide a basis for understanding the relationship between the natural processes and the impact of development and use on these island resources.

The purpose of this report is not to advocate either preservation or development. Ultimately, the Texas Gulf Coast barrier islands will be a combination of both. However, before either can be seriously considered, there must be a basis for discussion and understanding of the various uses currently being made of the resource. This report provides this basis for discussion and understanding by focusing on the Texas barrier islands from the recreational use perspective. The authors recognize that other uses relate to and impact on the islands as well, thereby affecting their attractiveness and desirability as a source of recreational opportunity.

Texas Gulf Coast Barrier Islands

The Texas barrier island system extends along much of the length of the Texas Gulf Coast from Louisiana to Mexico. The system is composed of five major islands: Galveston Island, Matagorda Island, St. Joseph Island, Mustang Island, and Padre Island. Of the total 365

beachfront miles (587 km) on the Texas coast, about 59 percent, or 215 miles (352 km) are on the five barrier islands.[13] The authors acknowledge the similarities in natural characteristics that exist between barrier islands and barrier peninsulas. However, this report deals specifically with the five major barrier islands so as to be compatible with the earlier work done in this area by the Conservation Foundation.

The physical characteristics of the Texas barrier islands are very similar to those described earlier in that they are composed of identifiable environmental zones from the beach to the bayshore system. They all have relatively low profiles and are therefore susceptible to flood and wind damage from storms and hurricanes.

Since 1871, 66 hurricanes and tropical storms have made landfall on the Texas coast, while 23 more have come close enough to cause damage.[14] Of those making landfall, 21 were great hurricanes with winds over 125 miles per hour (200 km/h).[15] Each barrier island has received the force of at least three great hurricanes. On the average, the Texas coast experiences one hurricane or tropical storm every year.[14]

Hurricanes and tropical storms are highly variable in the kinds of impacts they produce and in the extent of their damage. Their storm intensities are measured by flooding, storm surges, and velocity of winds. The amount of damage caused is determined by these three characteristics, as well as by the terrain, population density, and types of development in the hurricane or tropical storm's path.[16]

The possibility of major hurricane or tropical storm damage is a threat which is always present on the Texas barrier islands. Consequently, this threat cannot be overlooked in formulating policy decisions concerning the use and development of those islands, especially since it is a natural phenomenon which is equally applicable to all the islands.

There are other natural characteristics, however, which are distinctly individual to each of the islands. For example, each island has stretches of beach that are either in a state of accretion, erosion, or equilibrium. Each process creates benefits or costs in relation to island development and recreational opportunities. If a beach is in equilibrium or accreting, the amount of beach area available for recreation is either constant or increasing. If, on the other hand, the beach is eroding, the amount of the available resource is decreasing, often jeopardizing structures near the water's edge.

From a recreational perspective, the barrier islands provide a variety of attractive natural characteristics, one of the most important of which is immediate access to the Gulf of Mexico. Recreational activities associated with the Gulf vary from boating, sailing, and fishing to water contact sports, like swimming and surfing. The beach area also provides numerous opportunities for recreation. Other portions of the islands support activities, such as camping, hiking, hunting, picnicking, horseback riding, driving, and nature study. Commercial entertainment and public recreation facilities

are also available on certain islands. In summary, the Texas barrier islands support a great diversity of recreational opportunities.

The Texas Gulf Coast climate also contributes to the attractiveness of the barrier islands for recreation. In the winter months the average temperature ranges from about 58°F (14.4°C) at Galveston Island to 64°F (17.7°C) in the South Padre Island area.[17] This mild winter climate attracts visitors from Texas, as well as from out of state. During the summer, the average temperature is approximately 83°F (28.3°C) along the entire Texas coast.[17] These mild coastal temperatures combined with onshore breezes from the Gulf of Mexico bring large numbers of visitors to the islands.

Another important issue central to the objective of providing public recreational opportunities on the Texas barrier islands is access to the resource. Texas has the distinction of being one of the few coastal states which has open beaches legislation in the form of the Texas Open Beaches Act as passed in 1959.[18] The Act is based on two presumptions. "First, the state has never divested itself of its protection of the people's right to use the beach, and second, even if it has in certain instances, it can be shown that there is a presumption that the people have obtained a prescriptive right in the use of the beach by long usage."[19]

In effect, the Act recognizes the public's right to use the beach even though it may be privately owned. The only prerequisite is that there must be proof that indeed the public has used a specific beach area over a period of time, and thereby acquired a

prescriptive right for continued use, if attempts are made to curtail public access. To encourage local governmental agencies to adequately maintain these open beaches, the state finances 50 percent of the cost of cleaning beach areas fronting the Gulf of Mexico.[18]

Effectively, however, only about 36 percent, or 79 miles (127 km), of the total 215 miles (346 km) of beach on the Texas barrier islands are affected by the Open Beaches Act. The remaining 136 miles (219 km) are included within National Seashore or state park boundaries, or are on Matagorda and St. Joseph Islands and therefore are not accessible by public transportation such as causeways or ferries. Consequently, the Open Beaches Act may not improve recreational access to the beaches as dramatically as might be originally believed.

The Texas barrier islands are also used for many other purposes in addition to those associated strictly with recreation. Historically, grazing and ranching have occurred on the islands. As people have discovered the islands, some of these ranches have been replaced by second home, resort, and residential developments. Industrial uses range from port facilities, such as those on Galveston Island to commercial fishing fleets, like those on Mustang-North Padre Island. Some activities are dependent on the island's resources and proximity to the Gulf, while others are only remotely associated to the fact that they are on a barrier island. This situation suggests that on the Texas barrier islands, where developable areas are at a premium, some activities may need to be displaced to the mainland.

On the whole, only a small portion of the Texas barrier islands has been dedicated to development and concentrated human use. The

remaining undeveloped areas as yet pose few serious problems, as they are relatively untouched. On some islands, their remoteness and inaccessibility from the mainland are the primary reasons for their continued existence in a natural state.

In those areas that have been or are becoming developed, there are indications that the type of problems that have been experienced on the East Coast, such as those mentioned previously on the Bogue Banks, are becoming major issues as recreational development and use intensity increase. Recognizing this increasing recreational use and development along the Texas coast, this report will assist both public agencies and private sector organizations to identify those activities that are of social and economic importance as related to recreation on the barrier islands. This report is written to help the public and private sectors avoid future conflicts with the recreational use of the island resources.

In light of these general goals, it becomes evident that there are human influences that frequently transcend natural boundaries which separate the islands. These influences include social, economic and institutional characteristics and form regional systems within the island chain. The regional systems, as opposed to those defined strictly by geographical boundaries, are discussed extensively in this report. Therefore, based upon their social, economic, and institutional similarities, as well as their natural characteristics and geographical proximities, this report deals with the following regions: Galveston Island, Matagorda Island, St. Joseph Island,

Mustang-North Padre Island, Padre Island National Seashore, and South Padre Island (Figure 2).

This report focuses on the social and economic value of Texas' barrier islands as a system of recreational resources. Further, this report is based on the consideration that:

(1) fifty-nine percent of the Texas Gulf front is located on barrier islands;

(2) the barrier islands can be characterized as regional systems;

(3) needs for recreational opportunity and Gulf access are increasing with a growing Texas population and visitor numbers;[20]

(4) the natural characteristics of the barrier islands dictate special considerations for their use; and

(5) conflicts have arisen with recreational use of barrier islands elsewhere nationally, and therfore the need exists to examine the Texas barrier islands, paying careful attention to present and future recreational use and the resultant problems that can occur.

This report has three primary objectives:

(1) to examine current recreational use and development on the islands;

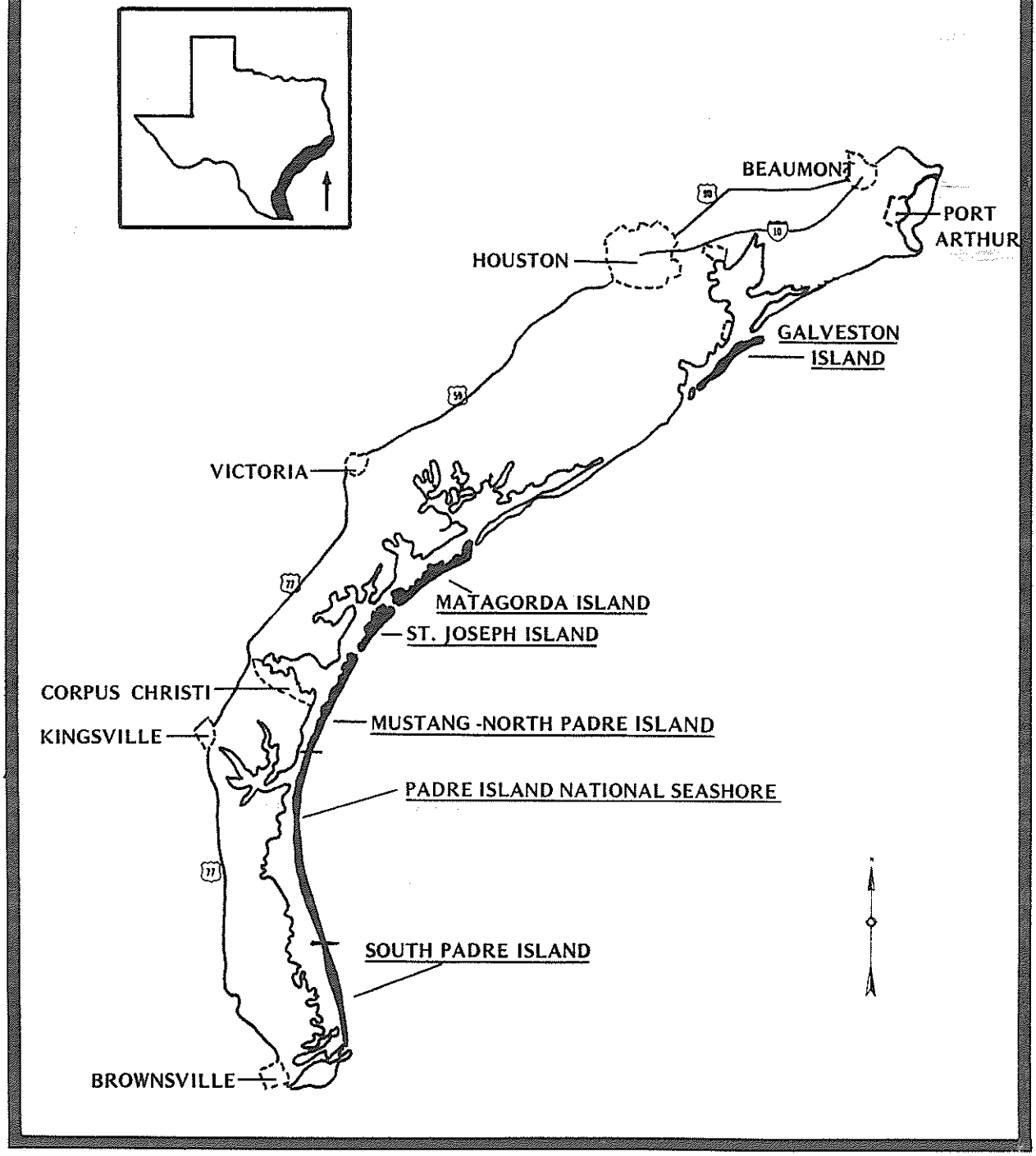
(2) to discuss the natural, social, institutional, and economic factors which enhance or inhibit the recreational use and development on the islands; and

(3) to forecast future trends of the recreational use and development on the islands in scenarios for the years of 1985 and 2000.

To accomplish these objectives, this report examines state and Federal regulatory factors affecting recreational use and development

BARRIER ISLAND LOCATIONS

Figure 2



through literature review and supplementary correspondence. The investigation of local factors influencing recreational opportunities was accomplished through personal and telephone interviews and on-site reconnaissance trips.

The format of this report will consist of an analysis of the existing recreational use and development on each island, along with factors that enhance or inhibit this use and development. Upon completion of the analysis for each individual island, a summary will be developed which will categorize its use level based upon certain identifiable criteria. Finally, scenarios will be formulated to examine possible future recreational conditions of each island.

CHAPTER II

EXISTING RECREATIONAL USE AND DEVELOPMENT ON THE TEXAS BARRIER ISLANDS

Galveston Island

Island Orientation

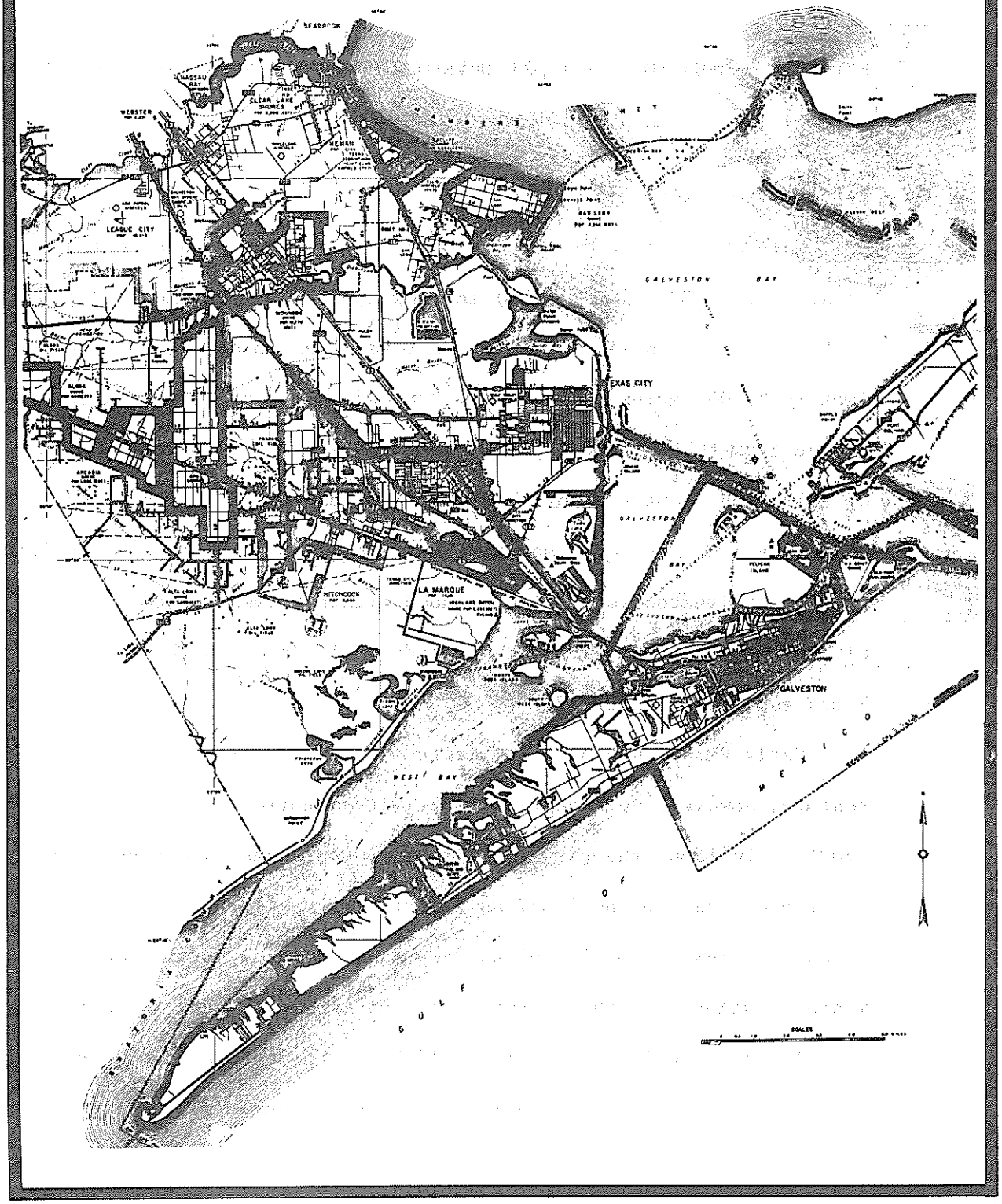
Galveston Island is the northern most barrier island on the Texas coast. It is 32 miles (52 km) in length, varies from one to two miles (1.6 to 3.2 km) in width, and has a total area consisting of approximately 27,000 acres (10,927 ha).[2] Geographically the island is separated from the mainland by Galveston Bay and West Bay. To the east of Galveston, separated by the Bolivar Roads Pass, lies the Bolivar Peninsula. To the west, separated by the San Luis Pass, lies Follets Island. Galveston Island is included within Galveston County and is within a 100 mile (161 km) driving radius of more than two million Texas residents (Figure 3).[21]

Early European explorers visited Galveston Island in the sixteenth century; however, no significant activity occurred until the early 1800's. In 1836, the city of Galveston was founded and a year later it became firmly established as a port of entry for the Republic of Texas. During the period of the Republic and early statehood, Galveston developed as the largest and most important city in Texas.[22]

The great Galveston Storm of 1900, which devastated much of the island, prompted a major rebuilding project, including not only the

GALVESTON ISLAND

Figure 3



salvage of homes and businesses, but also the re-establishment of transportation links with the mainland. Construction of a seawall also began, which has since protected the urban areas of the island from hurricane flooding on numerous occasions.[21] Along the seventeen-foot (5m) high seawall today, tourism development is popular with hotels, motels, and condominiums prominent.

Today, Galveston Island has a metropolitan population of approximately 62,000 inhabitants on the eastern third of the island. On the western two-thirds of the island there is a sparse population of nearly 8,000 inhabitants, bringing the total permanent population to approximately 70,000.[23]

Metropolitan Galvestion Island contains numerous residential, industrial, and commercial developments. The port of Galveston is highly developed industrially and commercially. The port handles large volumes of domestic and foreign commerce yearly. The chief commodities are: cotton, grain products, crude sulphur, raw sugar, tea, coffee, and ores. The port is navigable throughout the year and is only ten miles (16 km) from the open Gulf of Mexico. It also offers ship repair and dry dock facilities, including nuclear service facilities.[22] In addition to the shipping industry in Galveston, oil refineries; grain elevators; and food processing, dairy, agriculture, and chemical plants also provide a great deal of industrial growth for the city.[22]

Pelican Island, largely a man-made island built from dredged material is situated north of the Port of Galveston and is developing rapidly as an industrial complex for shipping interests. Texas A&M

University College of Marine Sciences and Maritime Resources is also located on Pelican Island, along with a major tourist attraction, Seawolf Park. Future plans for Pelican Island call for continued development of heavy industry related to shipping and commercial fishing and for provision of a small number of residential accommodations for the individuals who work or attend college on the island.[24]

In December 1975, the City of Galveston annexed approximately thirty square miles (78 sq. km) of land extending from 103rd Street to a line just west of, and including, the Sea Isle subdivision. In January 1977, the remainder of the island was annexed. Excluded from the annexation were the Galveston County Municipal Utility District Number One, also known as Pirates Beach and Pirates Cove, and the incorporated village of Jamaica Beach.[25] The main reason for the annexation of the West Island area was to institute a controlled growth plan devised by the City of Galveston Planning Department. The West Island Zoning Plan, developed in 1976, detailed how the newly annexed areas were to be zoned for future development. The majority of the property on the West Island was zoned as single-family residential areas. There were also smaller areas zoned for commercial and resort type development.[26] Up to the present, recreational subdivisions on the western end have provided their own utilities and services, or leased them from the City. With the annexation, provision of utilities and services to most of these subdivisions will now be the City's responsibility.[27]

The annexation of the West Island was contingent upon a few basic guarantees by the City. For instance, the City was required

to provide adequate services (sewer, water, and electricity) to the residents within three years or they could petition to be de-annexed.[27] The question of annexation was not strongly opposed by any particular group, even though the process placed greater burdens on some residents and developers in the West Island area. While tax rates increased for individuals, stricter city building codes created additional problems for developers.

The majority of undeveloped land on the West Island is in private ownership, held in large tracts for ranching and agricultural purposes. Many of the families owning large parcels of land may be forced to liquidate portions of their property, due to the higher tax rates levied on them through annexation. For example, one landowner paid property taxes of $25,000 annually before annexation and $100,000 afterwards.[28] Institution of tax relief for agricultural land has been suggested to lessen the burden. The prerequisite for such relief is that at least 50 percent of the landowner's income must originate from agricultural use of the land. However, none of the landowners on the West Island are able to meet this requirement.[29]

Galveston Island State Park, managed by the Texas Park and Wildlife Department, is comprised of 1950 acres (789 ha) of land on the western end of the island. It is the largest tract of publicly-owned recreational land on the island. Camping facilities are provided on developed sites and beach areas are also available for large numbers of day use visitors.

Public access to Galveston Island from the mainland is by three primary sources. From the north, the Interstate Highway 45 (I-45)

causeway, a six-lane artery, provides direct highway access to and from the mainland. The Texas Department of Highways and Public Transportation operates the free Bolivar Ferry connecting the western tip of the Bolivar Peninsula with Galveston Island, thereby providing access to the island from the east. At present, three boats operate across the ship channel with a capacity of 25 cars each. From the west, the San Luis Pass Toll Bridge, a two-lane bridge, handles traffic from Follets Island to Galveston Island. The bridge is operated by the Galveston County Road District.[30]

Numerous internal arteries within the metropolitan Galveston area provide adequate access throughout the city. The most heavily traveled arteries are Broadway Boulevard, Seawall Boulevard, and 61st Street. Broadway Boulevard provides direct access from the mainland via I-45 and distributes traffic to the central business district, wharves area, industrial complexes, recreation facilities, and beaches. Seawall Boulevard is a unique thoroughfare in Galveston in that it serves multiple uses. Activities along the thoroughfare involve vehicular traffic, parking, sightseeing, pedestrian traffic, bicycling and access to properties fronting the beach. The Gulf view from Seawall Boulevard is one of Galveston's major attractions. Sixty-first street is the major north-south route through Galveston. It connects Broadway with Seawall Boulevard. Farm-to-Market Road (FM) 3005, is a two-lane thoroughfare extending the full length of the West Island, from the western end of the seawall to the San Luis Pass Toll Bridge. This artery is the only access route throughout the

West Island.[30] Several perpendicular access roads are provided along FM 3005 to the beach.

Galveston Island as a Recreational Resource

Galveston Island's natural characteristics are similar to those exhibited by the Texas barrier islands in general. In addition, its rich historical past contributes to many popular, cultural and historical attractions. To develop the historical attractions, attempts are being made to restore the downtown area of the City of Galveston to its former nineteenth century atmosphere.

The City of Galveston has numerous cultural attractions that are associated with metropolitan centers. The City's music, drama, art, and entertainment all add to the attractiveness of Galveston Island.[31] With the proximity to the major metropolitan area of Houston, cultural events are also readily available to Galveston visitors and residents.

Presently, there are numerous recreational developments, both public and private, on Galveston Island. Public recreation facilities have been developed by several agencies. For instance, the City of Galveston Parks and Recreation Department is primarily concerned with providing municipal recreation facilities and services for the permanent residents of the island. This department maintains parks, playgrounds, ball fields, tennis courts, and recreation centers all located on approximately 365 acres (148 ha) of land.[32]

The Galveston Park Board of Trustees is chiefly interested in promoting tourist-related facilities. The Park Board maintains and

operates a number of attractions. Seawolf Park, which is located on Pelican Island, has a variety of World War II military craft on display. There is also a family park with fishing piers, picnic area, playground, and a pavilion.[33] Stewart Beach is a family recreation area near the eastern tip of the island which provides beach services, a children's amusement park, miniature golf, and concessions.[33] Ashton Villa, a restored and refurnished 1859 Italian mansion was one of the first Texas residences listed in the National Register of Historic American Buildings and has become a major historical attraction on the island.[34]

The Galveston County Parks and Beach Department provides outdoor recreation facilities for the general public. They have constructed beach front picnic areas, boat ramps, and fishing piers on the island and have also acquired two beach front park locations that are presently undeveloped, but are planned for future development. The department has aggressively acquired all its land through donations or one-dollar per year leases from landowners.

Galveston Island State Park offers more than one and one-half miles (2.4 km) of sand beach on the Gulf of Mexico, as well as numerous developed campsites for RV's and tents. Present development at the park consists of three large camping units with 150 campsites located between the dunes and FM 3005. There is also a concession complex developed with picnic sites and parking areas that have a total capacity of 500 vehicles. Three additional parking areas are provided south of the concession complex for day-use visitors with a 40 vehicle capacity at each site. North of FM 3005 to the bay,

the park includes nature trails and fishing areas that are enhanced by the presence of four bayous extending within the park boundaries.[21]

Privately developed recreational facilities on the island are plentiful, catering to the large number of tourists that visit the area. Hotels, motels, and condominiums are numerous along the seawall as well as tourist-related services such as restaurants, curio shops, and beach equipment rental stands. Several nationally known hotel/motel complexes are beginning to express interest in constructing facilities on the island. Small family operated accommodations comprise the majority of hotels and motels at present.

The recreational housing subdivisions on the West Island are privately developed and emphasize single-family dwelling units. Many of the residences are constructed adjacent to man-made canals. A land-use survey conducted in Galveston indicated that approximately 1500 units were located in recreation housing subdivisions. Observations suggested that from ten to fifteen percent of the recreational dwellings were being occupied on a permanent basis.[36]

Other private recreational attractions include: a marine-oriented theme park; two private golf courses; three marinas; numerous commercial boat launching ramps on the bay side; several commercial fishing piers; and a variety of party boats that operate from the piers located on the Galveston Ship Channel. Most of these private recreational facilities are owned and operated by small businessmen.

Galveston Island is highly utilized as a recreational resource. Visitation estimates by the Galveston Convention and Visitors Bureau revealed that for the year of 1975, the total visitation numbered

4,009,212.[35] Analysis of Galveston Island State Park user permits showed that approximately 700,000 visitors used its facilities in 1976, its first year of operation.[37]

The majority of the recreationists on the island are day use visitors from the Houston and Galveston metropolitan areas. According to Galveston Convention and Visitors Bureau Statistics, only 541,312 of the total number of visitors to the island, were overnight guests.[35] This figure represents only twelve percent of the total visitation. The remainder were day use visitors.

Visitors to Galveston can be seasonally distinguished. Summer is characterized as the primary tourist season. Causeway traffic count figures from the Texas Department of Highways and Public Transportation verify that the summer months of May, June, July, and August indeed bring the highest number of visitors to the island (Appendix A).[38] In addition, Galveston Island State Park had 500,000 of its total 700,000 annual visitors during the months of June, July, and August in 1976 (Figure 4).[37] The winter season in Galveston brings the majority of out-of-state visitors. In Galveston Island State Park, for example, approximately 90 percent of February campers were from out-of-state.[39]

Factors Significantly Influencing Recreational Use and Development

There are several factors that significantly enhance recreational use and development on Galveston Island. A major factor is its proximity to Houston, a rapidly growing city of 2,138,400 people.[40] The impact of this densely populated area on adjacent communities, such as Galveston, cannot be ignored. Day-use visitors from Houston comprise

the major portion of the visitors to the island. Construction of the I-45 artery has almost been completed. Once this is accomplished, the four-lane expressway will provide an uninterrupted journey from Houston to Galveston Island in less than one hour.

Another factor relating to access to the island is the increased accessibility of the region from distant points in Texas as well as from out-of-state. According to visitor statistics, the popularity of Galveston Island, both as a vacation resort area and a convention city, seems to be rising rapidly. Promotional efforts by the Chamber of commerce and the Galveston Convention and Visitors Bureau appear to be working well in the distant market areas.

An additional issue concerning access to the island is the possible construction of the Offatts Bayou Toll Bridge. This bridge has been proposed to relieve the downtown area of the overload of traffic bound for the West Island, and redirecting it to avoid the congestion that frequently occurs in the city streets. At a public meeting called to discuss the toll bridge, opposition was voiced by nearly all residents who would be affected by the building of the bridge in their neighborhood. They stated it would increase traffic in their neighborhoods, as well as prevent tall boats from entering the bayou. Despite this opposition, the Galveston City Council and the County Commissioners Court stated that they would recommend that the bridge be built.[41]

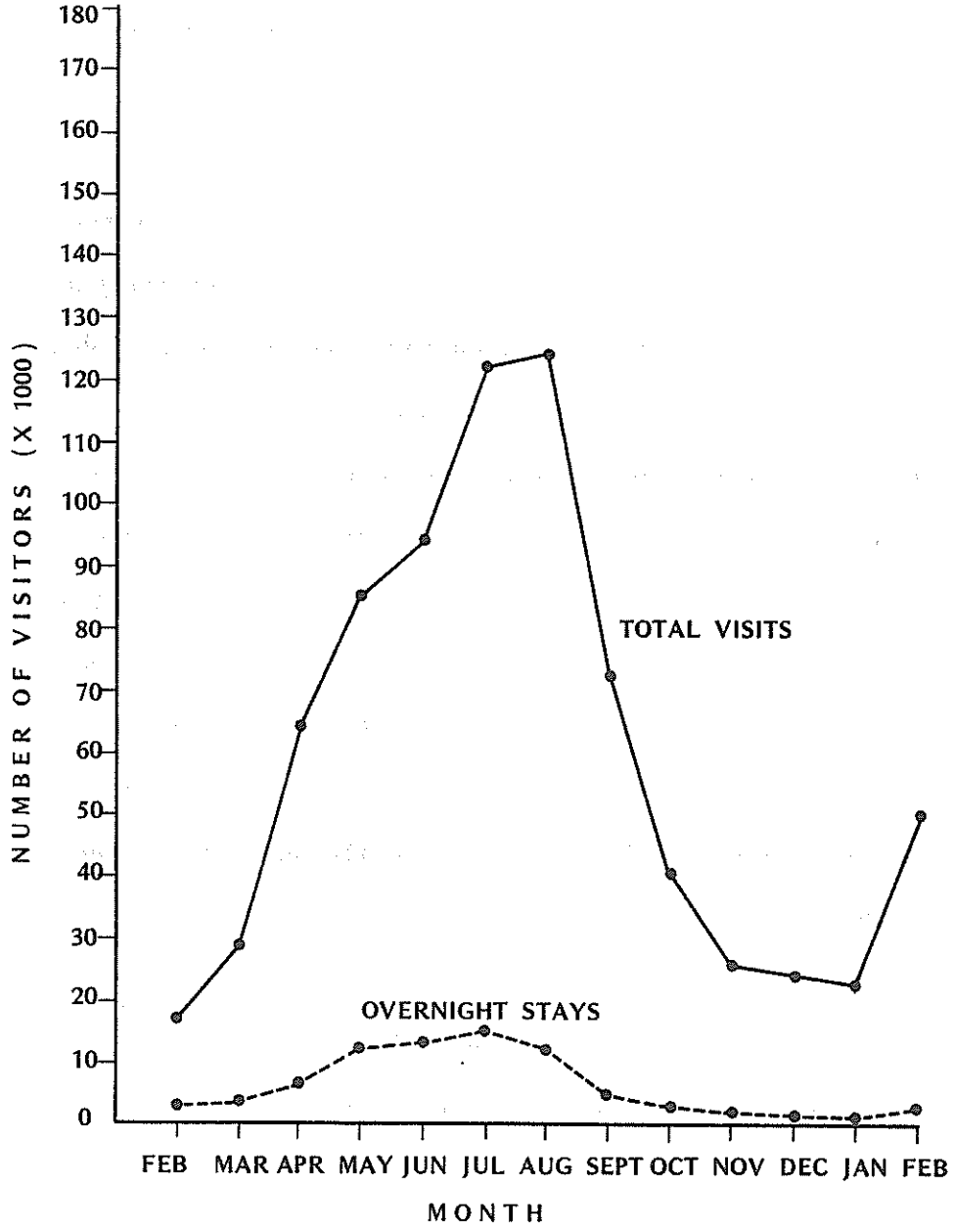
A factor that has enhanced the recreational use and development of Galveston Island has been the changing attitude of city residents.

Figure 4

Galveston Island State Park

Monthly Public Use

(Feb. 1976 to Feb. 1977)



Source: Texas Parks and Wildlife Department

In the past, residents looked unfavorably on allowing major outside recreational development to take place on "their" island. The economic benefits to be gained have apparently changed the residents' minds.[42] The changing community attitude has focused on the idea that recreational growth and development will bring an economic uplift to the community as a whole.

This change in attitude has led to another occurrence that will significantly enhance recreational use and development, the solicitation of major hotel/motel chains.[43] The Holiday Inn in the downtown area is the only major chain motel represented on the island at present. However, plans for a Hilton and a La Quinta have been developed and their construction is imminent.[24] This increase in the number of nationally known hotels will further enhance tourism to the area.

The community attitude also has motivated a number of individuals and small businesses to provide tourist-related services for visitors to the island. If tourist numbers on the island increase, services will have to be provided in the form of restaurants, curio shops, grocery stores, and rental operations, so that the community can benefit economically from these visitors.

Galveston Island State Park will continue to stimulate increased recreational use of Galveston Island. As state residents become more aware of the opportunities offered by the park and as future development within the park takes place, its usage could exceed one to two million visitors annually. During the summer months when the park's use is extremely high, impact felt on adjacent facilities would undoubtedly be quite heavy. The crowding of other West Island beaches

and the congestion of local highways will be management problems that island authorities will need to consider.

Future expansion at the park will ultimately be decided by user demands with consideration given to environmental impact. Beach areas south of FM 3005 are available for future development needs. These areas could be used for additional parking, camping, day-use, and picnicking facilities. Future development north of FM 3005 will be limited to another nature trail and two small parking lots, due to the fragile nature of the marshes within this area.[21]

The large supply of undeveloped land on the western end of the island is also an enhancing factor. With this supply of undeveloped land there is adequate room for recreational expansion to take place, if the property is acquired by recreational land developers. Since development has been limited to the eastern one-third of the island, the western two-thirds is relatively uncongested and suitable for major recreational development either by the private or public sectors.

With the annexation of the West Island within the city limits, two enhancing factors relative to recreational use and development became apparent. First, the higher taxes that are now placed on landowners who have been annexed into the city may force a redistribution of property in the form of selling, leasing, or donating land to public or private interests. Second, the legal requirements of annexation dictate that adequate services must be provided to the residents of the annexed territory within three years.[27] With the provision of these adequate services, conditions will be better suited

for use of the western end of the island. It would encourage recreational development by those who could not afford to provide the services with their own capital.

In addition to enhancing factors, there are also inhibiting factors affecting recreational use and development on Galveston Island. One such factor is the U.S. Army Corps of Engineers' permitting actions relative to canal and coastal land development projects. The permitting responsibilities are authorized under Section 10 of the Rivers and Harbors Act of 1899 (30 Stat. 1152) and Section 404 of the 1972 Federal Water Pollution Control Act Amendments (P.L. 92-240, 86 Stat. 47). Under Section 10 of the Rivers and Harbors Act, any activity such as dredging or erection of a structure in the navigable waters of the United States must have a permit from the Corps of Engineers. Section 404 of the Federal Water Pollution Control Act Amendments authorizes the Secretary of the Army to issue permits for the discharge of dredged or fill material into navigable waters at specific disposal sites. Canal developments, marinas, boat ramps, fishing piers, and shoreline bulkheading for residences all require the dredge and fill permits before construction can begin.[44]

The permitting system is usually a very lengthy process once the application for a permit is received by the District Engineer. He must issue a public notice, usually within 30 days, to all interested individuals, groups, and governmental agencies. An advance notice of 30 days is also a requisite, if a public hearing is required. If there are no substantive objections to the activity, a permit can

usually be issued within 60 to 90 days. However, if the application becomes controversial, as most permits now do, the processing of the application could take up to one year or more.[45] The Corps must inform approximately 15 federal and state agencies of a permit application. The Corps coordinates this process in addition to its concerns for navigable waters and requests major inputs from the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Environmental Protection Agency, Soil Conservation Service, the General Land Office and the Texas Parks and Wildlife Department among others. The Corps is required to consider all objections which are brought and to request the applicant to meet and resolve these objections with the objectors. Canal development and other dredge and fill activity on Galveston Island are virtually at a standstill due to this lengthy process. Construction costs increase continually as delays due to regulations lengthen.

Rising development costs and strict building codes discourage recreational housing construction. Higher building and development costs due to stricter city building codes, in turn, require an increase in the price of developed lots and further inhibit recreational usage due to economic factors. Flood insurance elevation requirements also place a greater burden on developers that will once again be passed on to consumers in the form of higher prices. Wind and flood damage insurance premiums are another added cost that the buyer must bear. Increased city taxes also must be paid by those owning homes on the western end of the island since in became annexed. The higher

costs and taxes can discourage individuals from purchasing land and houses on Galveston, and thus hinder private recreational development there.

An inhibiting factor that is important to recreational development on Galveston Island is the fact that a majority of the West Island property is in large parcels owned by ranchers, not developers. If these ranchers continue to hold their land, further growth of recreational development and use will not occur on these properties.

The annexation of the West Island can also be considered an inhibiting factor regarding the provision of services, primarily sewer facilities, that require passage of bond issues. It is unlikely that these bond issues will pass since the majority of Galveston's population, located in the urbanized eastern end of the island, will probably vote against the bonds since they would not receive any of the benefits.[28]

The high number of visitors to Galveston Island has, in itself, become a major inhibiting factor in a number of ways. During the summer months and particularly on weekends, beach areas are extremely overloaded at peak times, especially in the urban areas of the city.[46] The high volume of traffic on FM 3005, as well as other interior arteries of Galveston, also discourages increased visitation, due to severe traffic congestion throughout much of the city.

The local citizens of Galveston are greatly concerned about the masses of people who migrate to the island during peak summer months. Their major complaint is that visitors from outside the county do not pay a fair share for services, either through taxes or by spending

money in the community. This concern was voiced at a U.S. Bureau of Outdoor Recreation hearing held in February, 1977. Citizens, recreation professionals, and public officials all related how the city and county of Galveston had to carry the burden of providing services for out-of-county and out-of-state visitors. Although the state does provide a percentage of the funds needed for these purposes (up to two-thirds), the City and County are responsible for beach cleaning and maintenance. In addition, they provide support for auxiliary police and safety personnel for the protection of visitors.[46]

In summary, Galveston Island is one of the most heavily utilized recreational resources on the Texas coast. With the expansion of services to accommodate visitors as demand has increased, Galveston has all but committed itself to a future of continued recreational growth and development. The expansion has progressed at such an accelerated rate that problems have arisen which local governments have not yet been able to solve. Recreational use and development on the island is expected to increase significantly in the future and plans should be developed to guarantee that the growth will be orderly so as to safeguard the barrier island from any future harmful effects.

Matagorda Island

Island Orientation

Located approximately five and one-half miles (9 km) off the mainland in Calhoun County, Matagorda Island is 35 miles (56.3 km) long and averages two miles (3.2 km) wide. Its total area is 50,900

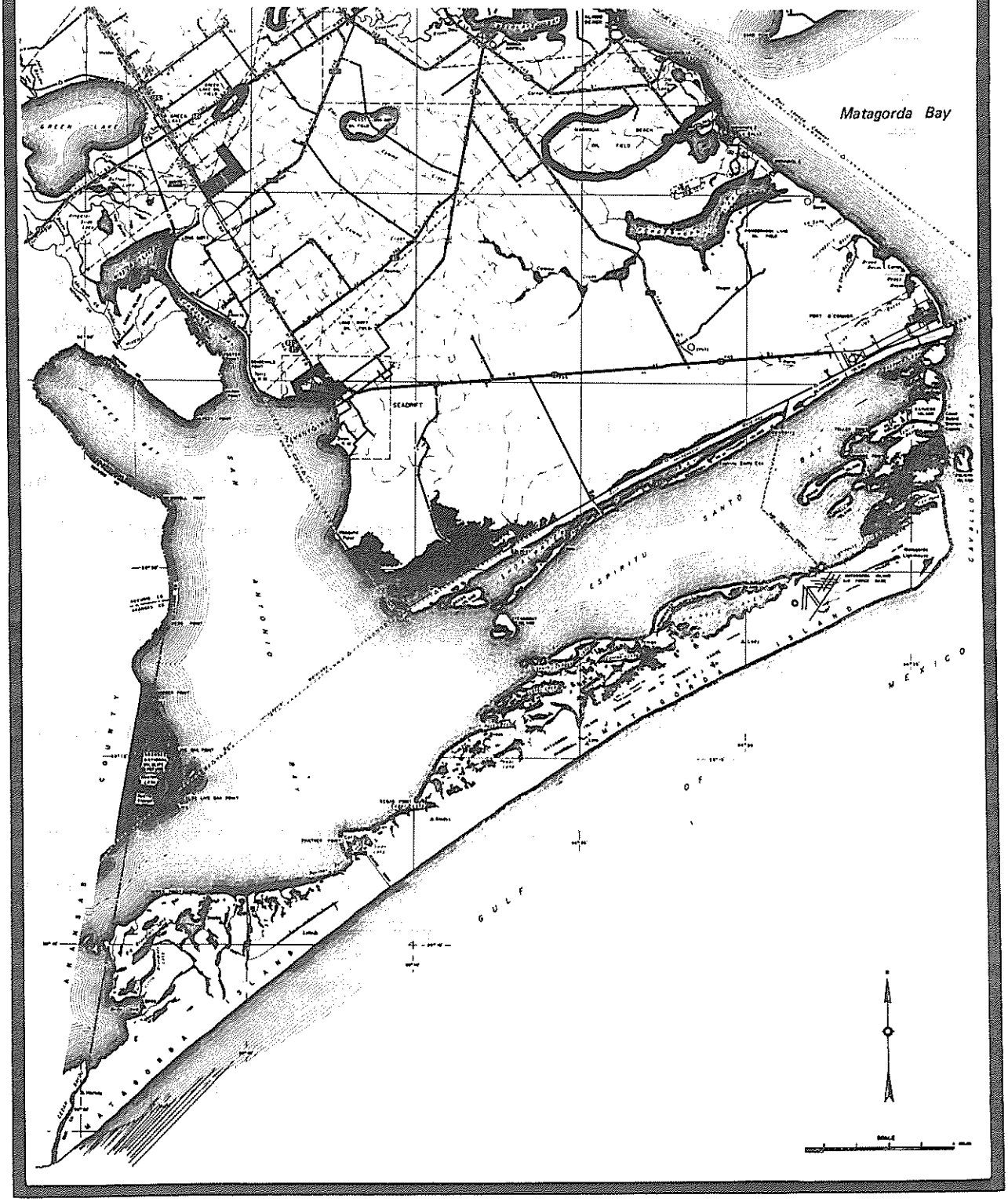
acres (20,600 ha).[47] Cavallo Pass forms the northeastern boundary of the island and Cedar Bayou forms the southeastern boundary. Espiritu Santo Bay, San Antonio Bay, and Mesquite Bay separate Matagorda Island from the mainland (Figure 5).

Although Matagorda Island is first mentioned in written history as early as 1519, little meaningful activity occurred there until the nineteenth century. The establishment of two small towns for several years during the mid-1800's signaled the beginning of significant development on the island. During the same period a lighthouse, which is still in operation today, was built on the northeastern end of the island. A Confederate Army fort also occupied the island briefly during the Civil War. Following the war, a U.S. Coast Guard life-saving station was added to the lighthouse in 1878, thus becoming the first evidence of any Federal government claim to the island.[48]

Prior to 1940, ranching was the primary use of Matagorda Island. In 1940, the Federal government acquired 18,992 acres (7,686 ha) of land on the island by condemnation and 16,370 acres (6,624) ha) by lease from the General Land Office of the State of Texas. The rest of the island, about one-third of its total area, remained in private ownership. The Federal property was to be used for a bombing range and military base. The bombing range and base were operational until deactivated in 1945. They were re-activated in 1949 by the Strategic Air Command and used until November, 1974, when the Air Force officially announced the closing of the base and bombing range.[48]

MATAGORDA ISLAND

Figure 5



Upon closing the base and with the approval of the Joint Armed Services Subcommittee, the island was declared excess property, making it available to other Federal agencies. Reports on the excess real property were submitted to the U.S. General Services Administration's (GSA) Regional Real Property Division. That office was given the responsibility by the Federal Property and Administrative Services Act of 1949 (63 Stat. 377) to notify all Federal agencies of the availability of the excess land on the island. If all the excess property was not obtained by Federal agencies, it then could be declared surplus, allowing state and local governments to compete for the property.

The two public agencies that have become interested in acquiring the island are the U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD). Each of these agencies has expressed a desire to obtain the island as an area for wildlife protection of varying degrees and for provision of recreational opportunities. By submitting its claim to the Federal property simultaneously with the USFWS, the TPWD has effectively bypassed the normal Federal land disposal procedure. As a result, GSA must now decide the disposition of the excess property in terms of whether the Federal or State agency will receive ownership and control.

At the time of the closing of Matagorda Island Air Force Base and Bombing Range, public sector ownership remained divided between the State of Texas (16,370 acres) [6,624 ha] and the Department of Defense (18,992 acres) [7,686 ha].[47] GSA is only responsible for

disposing of the Department of Defense property, since full control of the State land will revert back to the Texas General Land Office with the termination of the lease. As a first step, GSA has proposed dividing the ownership of this land between the Federal and State agencies. This proposed division would give the State 12,276 acres (4,968 ha) of the Federal land on the island and seven acres on the mainland at Port O'Connor. The USFWS would receive 6,716 acres (2,718 ha) on the southwestern part of the island to protect the wintering grounds of the endangered Whooping Crane.[49] However, no final decision has as yet been made on the acceptability of this proposal, and alternative proposals are likely to be submitted.

Regardless of who receives control of the island, existing facilities would be transferred along with the property. Among these facilities are the 44 buildings that comprised the Air Force base, including shop space, warehouse and storage areas, and administrative offices. The base also has two active and four inactive runways, along with associated aprons and taxiways. In addition, there are four existing barracks, which under Air Force administration, accommodated approximately 200 personnel. Roads on the island amount to 24 miles (38.6 km) of paved and 22 miles (35 km) of unimproved roads.[48]

The bombing range occupies most of the Federal property and is largely undeveloped, with the exception of scattered observation towers. Since it is composed mostly of vegetated barrier flats, grazing rights have been leased to the owner of the private ranch adjacent to the bombing range, as well as to the former private owner of the land where the Air Force base is situated.[50]

As a result of its long history as a military base, no public access is provided to Matagorda Island. Travel to and from the island is restricted to private boat and aircraft. The Federal government has developed dock facilities on the island and on the mainland in Port O'Connor for transporting Air Force personnel by utility boat. These docks could easily be converted to facilities for public ferries to provide recreational access for future visitors.

Matagorda Island as a Recreational Resource

In general, Matagorda Island exhibits the attractive, natural characteristics of the Texas barrier islands, although the beach resources are most notable. The beaches are uncommonly wide, averaging 400-500 feet (122-152 m), and in some cases extending up to 2000 feet (609 m) in width.[48] Matagorda Island is one of three areas on the Texas coast which have sand beaches that are not being actively eroded.[48] Additionally, many shells have collected on the beaches due to the lack of human activity on the island. This example illustrates the generally primitive state of all the island's resources. With the exception of St. Joseph Island, no other island on the Texas coast possesses pristine qualities similar to that of Matagorda Island. Due to the pressures of competing development interests, pristine resources of this nature are becoming increasingly scarce within coastal areas.

Historical resources on the island which are potentially exploitable deal mainly with its military history. They involve two time periods, the Civil War era and the modern era from World

War II to the present. Along with this, other minor events have been recorded, such as small communities existing for short periods of time, pirate activity, and possible visitation by early eighteenth century European explorers.

Presently, there is no public recreational development on Matagorda Island. However, the air base facilities have been maintained and could be converted to recreational facilities. Potential recreational activities on Matagorda Island can be categorized within the three physical subdivisions of the island. The beach-surf zone provides swimming, shell-collecting, beach walking, and nature study. Secondly, due to the lack of development on the interior of the island, it can support activities such as upland game hunting (deer, quail, dove, and turkey), wildlife observation, camping, hiking, and historical and prehistorical study. Finally, the bayside of the island can provide fishing, waterfowl observation, and waterfowl hunting.

Utilization of the unique recreational resources on this vast island at present is very limited because it can only be reached by individuals with access to private boats and aircraft.

Factors Significantly Influencing Recreational Use and Development

The character of the recreational use and development of Matagorda Island will depend upon GSA's decision as to who will ultimately control the island, the USFWS or TPWD. Depending upon which agency is given control, use and development will vary with the objectives of that agency. The State of Texas' proposal is to acquire

control of the entire publicly-owned portion for development by the TPWD according to their conceptual plan. Their plan states that seven-eighths of the property would be designated as a "wildlife management area", which according to TPWD guidelines, emphasizes hunting as the primary use.[51] The remainder of the property is located on the beach and would be open to public recreational use.

The USFWS has filed a formal request for control of the central portion of Matagorda Island as an addition to the protected habitat for migratory birds and endangered species. This property would be designated as part of the Aransas National Wildlife Refuge, which is across the bay from that section of the island. Their proposal includes acquisition of only those Federal lands that are closest to the refuge. In addition, under this proposal State-owned lands close to the refuge would be acquired by the USFWS in return for a transfer of management control of Federal lands in the northern section of the island to the TPWD. The State would also keep its own northern holdings.

The Federal plan does not propose to dedicate the entire island as a refuge for the Whooping Cranes.[52] While the entire 18,992 acres (7,686 ha) of Federal land to be disposed of would carry the name of the wildlife refuge, only 6,641 acres (2,687 ha) of this land would be seasonally managed as an inviolate sanctuary for the benefit of migratory birds and endangered species. The balance of the property would be used for wildlife management and public recreation.[53] The USFWS feels it should own the entire Federal property to assure that

the types and intensities of public recreation permitted would be compatible with the needs of migratory birds and endangered species during critical periods of the year.[53]

One issue on which both agencies agree is that of the means of access to the island. Neither the USFWS nor the TPWD support the construction of a causeway from the mainland, although a proposal for such a causeway has been promoted by Calhoun County business interests.[54]

Both agencies propose passenger ferry service as an alternative, providing limited access as well as a unique recreational experience in itself.[48] Whichever agency receives control of the island, the decision as to ease of access will become an important factor influencing the direction of development and kinds of utilization that can be expected on the island's public property.

Access to the private ranch on the southern portion of the island is restricted as well. There are no improved roads from the publicly-owned northern section, and as mentioned previously, no bridges connect the island to the mainland. This restricted access has important implications concerning any future development that the owner might consider, as a result of being adjacent to a major public recreation area. In such a situation, the owner might elect to develop recreational facilities on his property anticipating potential economic returns from the new visitors. However, in light of the inhibiting factor of inadequate access to the property, it is unlikely that any major opportunistic development of this nature would occur. This is borne out by the fact that the management objectives of the public

land nearest the ranch will focus on wildlife management, not recreational development.

At this point in time, no final decision has been made as to who will manage the excess public property on Matagorda Island. Despite the proposed division of ownership by GSA, negotiations between State and Federal officials will ultimately have to be resolved before the future of the island can be determined.

St. Joseph Island[55]

Island Orientation

St. Joseph is one of the smaller barrier islands on the Texas coast. It is 20 miles (32 km) in length and between one to five miles (1.6 to 8 km) in width with a total area equaling approximately 28,000 acres (11,330 ha).[2] The island extends from Cedar Bayou at Matagorda Island on the northeast to Aransas Pass at Mustang Island on the southwest and is separated from the mainland by Aransas Bay. The island is contained entirely within Aransas County (Figure 6).

St. Joseph is unique among the Texas barrier islands because it is entirely privately owned by one individual who utilizes the island for ranching purposes.[56] Development on St. Joseph Island is negligible and as a result, it has retained its primitive qualities.

The island is available to the general public on a limited basis. The single means of public access is provided by a jetty boat operating from Port Aransas. The boat leaves Port Aransas on the hour and lands at the jetty on the north side of Aransas Pass. Passengers are transported to and from the island for a small fee. The operators

of the boat indicated that it was used often, but statistics were not available.[57] Individuals can also reach the island by private boats and planes. The island's owner gains access to his property by means of a private airfield constructed near his ranch headquarters. Public access to this island's interior is non-existent since the island is privately owned.

St. Joseph Island as a Recreational Resource

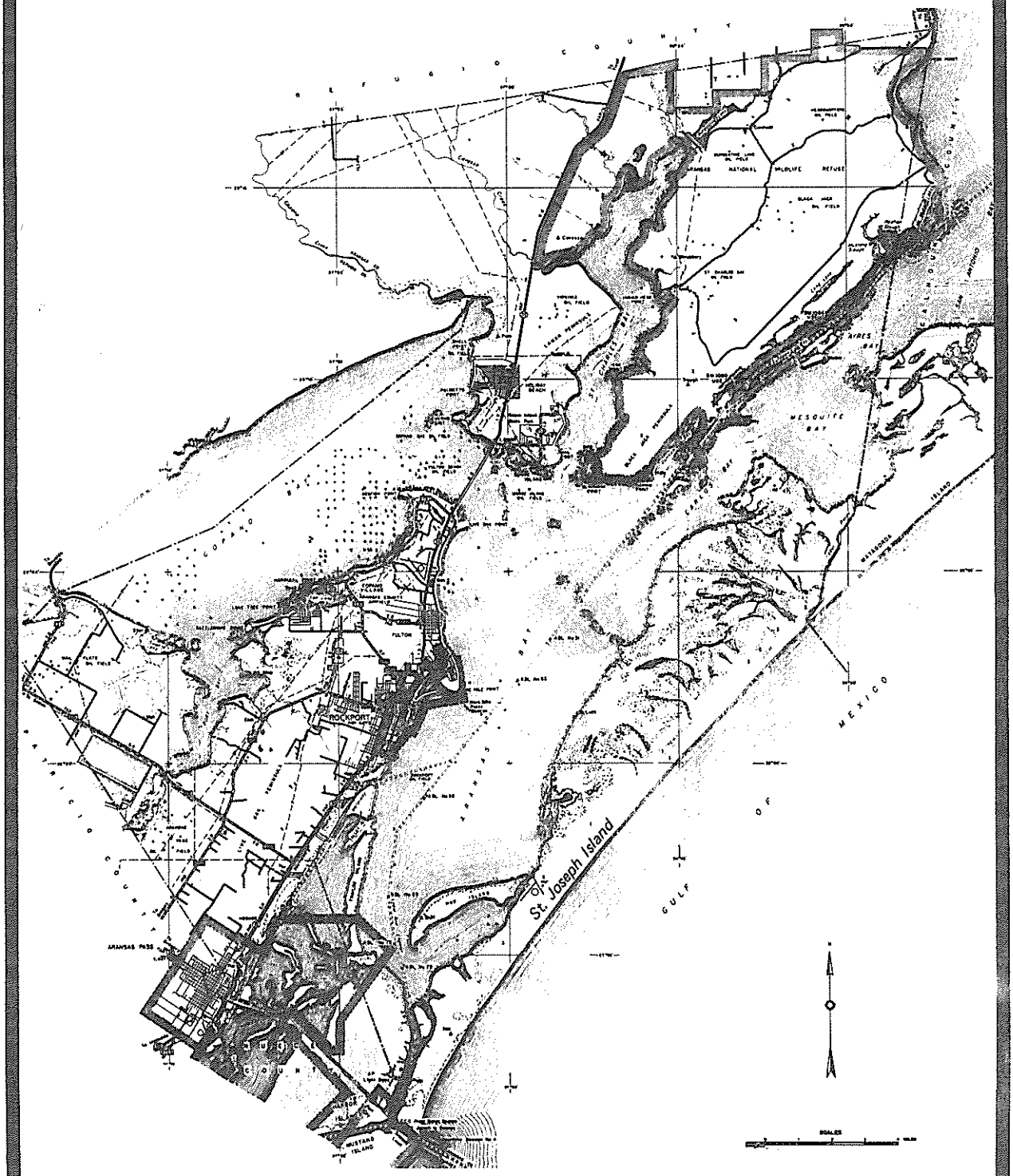
The natural attractions of St. Joseph Island are its most outstanding features, since human impact is limited. The island exhibits the many varied natural characteristics associated with barrier islands along the Texas coast. The beach features are very similar to those on Matagorda Island. Its beaches are wide, averaging 400-500 feet (122-152 m) in width with an abundance of shells that are characteristic of highly pristine beaches along the Texas coast. St. Joseph Island's beaches are also among those on the Texas coast that are not being actively eroded.[48]

The dune system and island interior are also very similar to Matagorda Island. There are well developed, active dunes varying in height from a few feet up to 30 feet (1 to 10 m), as well as a stabilized primary dune line. The vegetated barrier flats between the dune ridges and the bay side marshes are utilized for livestock grazing by the owner.[48]

Wildlife is also abundant on the island, due to the natural state of the resource. Waterfowl are plentiful during the fall and winter months and a variety of mammals inhabit the island year round,

ST. JOSEPH ISLAND

Figure 6



including jackrabbits, raccoons, deer, coyotes, and badgers.[48] The present owner maintains St. Joseph Island much like a wildlife preserve, preventing public hunting and allowing the animals to function naturally within the barrier island ecosystem.[58]

Present recreational development on St. Joseph Island is nonexistent since it is privately owned. Recreational use of the island is also restricted because of limited access. Most of the activities occur on the beach or on the waters immediately surrounding the island.

The island users are nearly all local residents who use private boats to reach it and visiting tourists who use the jetty boat from Port Aransas. User figures cannot be accurately determined since private access to the island is not documented. The island offers an attractive pristine beach environment to individuals once access is achieved.

Factors Significantly Influencing Recreational Use and Development

Since St. Joseph Island is privately owned by one individual, the factors influencing recreational use and development are primarily inhibiting. The ownership situation is not expected to change in the near future. According to interviews with local officials, the present owner is firmly committed to maintaining the island in its present, natural state.[56]

Another major inhibiting factor related to recreational use and development is the limited access to the island. The beaches of St. Joseph Island are open for use by the public. However, since access

to them is restricted, use levels on this island are low compared to the other barrier islands along the Texas coast. This factor tends to inhibit recreational use, since there are beaches at a number of other sites on the Texas coast where adequate public access is provided.

A third inhibiting factor is that the island is relatively unknown due to its long history of private ownership, limited public access, and correspondingly low use levels. Use levels and the awareness of other barrier islands along the Texas coast are related to the adequacy of public access provided to them, as substantiated throughout this paper. The potential for beach use on the island can be enhanced, if public access would be expanded. If additional public access would be provided, awareness of the resource would increase and subsequent use levels would also probably increase.

The present situation of St. Joseph Island, that of being privately owned, will prevent large-scale recreational use and development in the future. The inhibiting factors mentioned previously all support this conclusion. Future demand for an increase of coastal recreation land in the State could conceivably alter the complete private ownership nature as it now exists on the island, but only time will reveal whether this becomes a reality.

Mustang-North Padre Island

Island Orientation

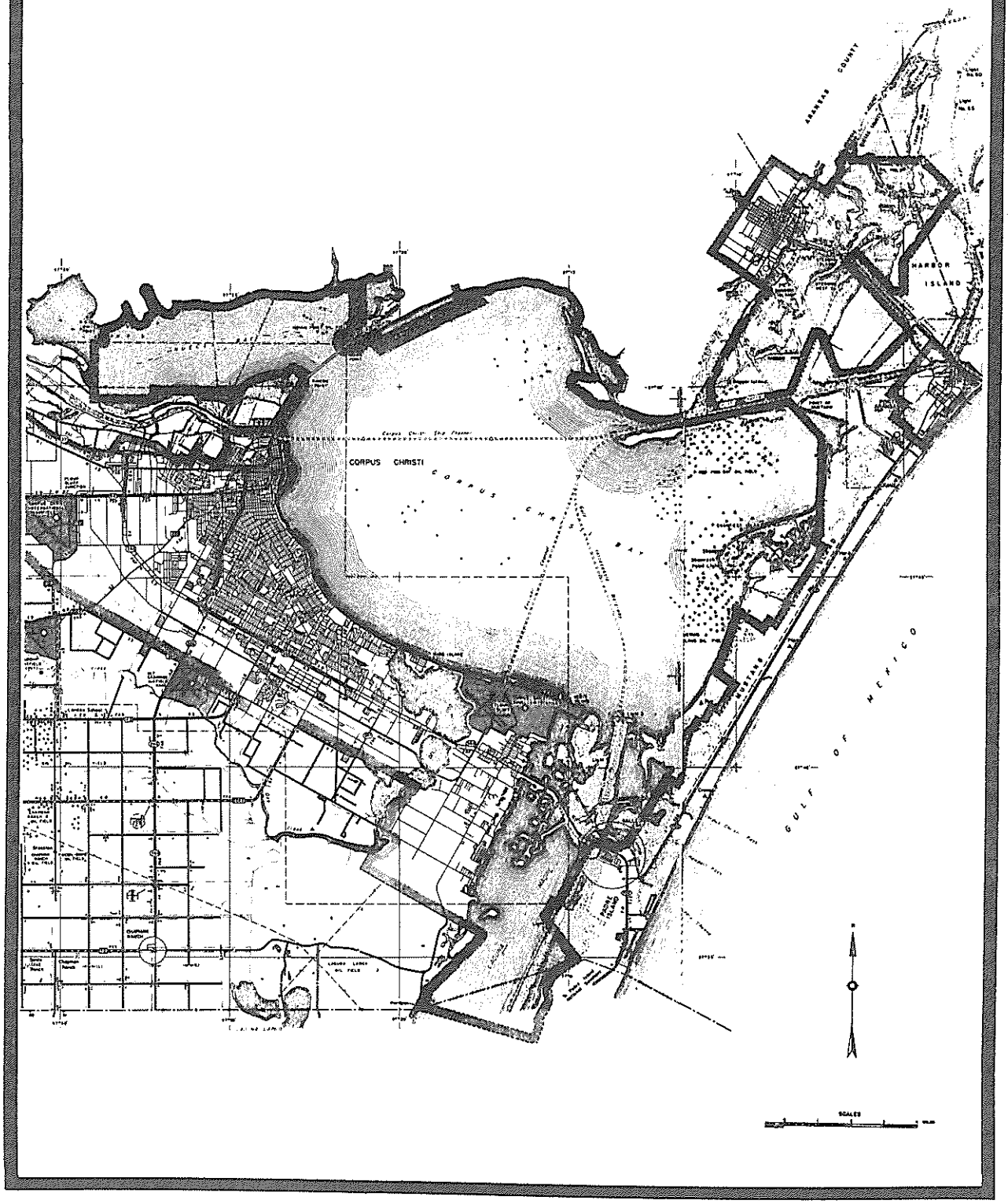
Mustang Island and northern Padre Island are located approximately six miles (9.6 km) seaward of the mainland in the central

portion of the Texas coast. Mustang Island is contained entirely within Nueces County and is separated from St. Joseph Island to the northeast by Aransas Pass Inlet. To the southwest, Corpus Christi Pass, which is now closed, separates Mustang Island from Padre Island. North Padre Island, part of both Nueces and Kleberg Counties, stretches from Corpus Christi Pass to the northern border of Padre Island National Seashore. It is separated from the mainland by Corpus Christi Bay and the Laguna Madre and is about 20 miles (32 km) from the downtown area of the City of Corpus Christi (population: 301,100).[59] Together the two islands (hereafter referred to as Mustang-North Padre Island) consist of approximately 32,600 acres (13,152 ha). Combined, they are 28 miles (45 km) in length with an average width of two miles (3.2 km) (Figure 7).[60]

Mustang-North Padre Island has had a relatively short history of significant human use. It was initially utilized for grazing and ranching along with the rest of Padre Island beginning about 1800.[61] The town of Port Aransas was an exception to this pattern of ranching use. It was established as a harbor and port facility by 1830.[62] It was the major port serving Corpus Christi during the middle 1800's highlighted by the embarkation of California gold seekers in 1849.[62] As deeper channels were dredged to Corpus Christi, the major industry in Port Aransas shifted to commercial fishing.[63] Later the town's character evolved into a tourist and sport fishing community. The town is now one of the State's major sport fishing centers, with a large number of charter and party boat businesses.[64] In addition, the

MUSTANG - NORTH PADRE ISLAND

Figure 7



tourist trade related to sport fishing has also been attracted by the casual life-style of the community and the surrounding coastal environment.

The modern history of Mustang-North Padre Island began in 1927 with the opening of the Don Patricio Causeway. The link to the island was short-lived, however. In 1933 a hurricane destroyed the wooden structure.[65] Interest in the island was rekindled in the late 1940's with a plan for a new causeway. The Padre Island Causeway (later named the John F. Kennedy Causeway) opened in 1950 followed closely by scattered construction of motels and single-family residences.[65] The major thrust of development began in the 1960's heralded by the opening of the "Million Dollar Inn" in 1967, the first component of a 3,800 acre (1,538 ha) planned subdivision development, called Padre Isles.[66] Condominium and single-family residential developments have progressed slowly since then.

Presently, there are two small population concentrations on Mustang-North Padre Island. Port Aransas at the northeastern end of the island is an incorporated town with about 1,300 permanent residents. The community consists of single-family homes and condominiums along with associated facilities to serve an expanded summer tourist population. At the opposite end of the island, near the causeway approach from Corpus Christi, is the subdivision development mentioned above, Padre Isles. This development now has a permanent population of 400 to 500 residents.[67]

The land between Port Aransas and Padre Isles is largely undeveloped. The majority of the property is held privately by real

estate development companies. As a result, much of the island has been subdivided into development tracts. Petroleum drilling operations are also evident, but not numerous. Public property on Mustang-North Padre Island consists of three small county parks and the 3,570-acre (1,445 ha) Mustang Island State Park which is presently under construction.

The proximity of Corpus Christi has a significant influence on the land uses of Mustang-North Padre Island as well as the surrounding region. Agri-business, mineral production, and defense-related industries have traditionally been the mainstay of the Corpus Christi area economy.[68] Heavy industrial complexes are being developed along the northern shore of Corpus Christi Bay. Associated with this industrial development is the potential growth of the Port of Corpus Christi. The major new development proposed in this area is the deep-draft port facility at Harbor Island, immediately adjacent to Port Aransas. The Nueces County Navigation District has applied for permits to begin construction of the project and the U.S. Army Corps of Engineers is currently preparing an environmental impact statement. The plans for the port involve extensive dredging, filling, and diking around Port Aransas to create a facility capable of serving three supertankers simultaneously.[69]

The proximity of Corpus Christi also affects the character of the development on Mustang-North Padre Island, in that a portion of the island falls within the extra-territorial jurisdiction (ETJ) of the City. Consequently, this area is subject to the standard

subdivision requirements of the City, such as street width, lot size, and park dedication. Padre Isles is the only existing development within this ETJ at the present time.

Another influence of the City that affects Mustang-North Padre Island is the growing local tourist industry. To stimulate this industry, the voters of the City recently approved a $14.4 million bond issue for the development of a convention center complex.[68] An increase in convention and tourist visitation to Corpus Christi would undoubtedly have an impact upon Mustang-North Padre Island, since there is easy access to the island from the City.

Access to Mustang-North Padre Island from the mainland is provided by two approaches. From the north, the Port Aransas Causeway, State Highway 361 extends from Aransas Pass to Harbor Island. It is a two-lane highway that brings traffic to a free ferry operated by the Texas Department of Highways and Public Transportation which links Harbor Island to Port Aransas. At present, a maximum of five ferries operate across the ship channel with a capacity of nine cars each.[70] From the south, a four-lane divided highway, Park Road 22 (PR 22), crosses the Laguna Madre from Corpus Christi on the John F. Kennedy Causeway. The high, fixed bridge over the Gulf Intracoastal Waterway eliminates the need for a draw or swing span.

On the island, PR 22 continues south from the causeway as a two-land road to Padre Island National Seashore. Park Road 53 (PR 53), also a two-lane highway, intersects with PR 22 two miles (3.2 km) from the causeway and extends north along the length of the island

to Port Aransas. At intervals along PR 53, four roads provide access to the Gulf beach, the major recreational resource of Mustang-North Padre Island.

Mustang-North Padre Island as a Recreational Resource

Mustang-North Padre Island's natural attractions are comparable to those exhibited by the other Texas barrier islands. Of particular note on this island are the relatively wide beaches and high dunes characteristic of the islands along the central portion of the Texas coast.[71]

Besides the natural attraction of the barrier island, Mustang-North Padre Island benefits from its proximity to Corpus Christi. All the cultural and entertainment attractions associated with urban areas exist in this City. As a result there are a variety of activities and attractions for the recreationists using the island.

On Mustang-North Padre Island, there are recreation facilities for a number of activities. The Packery Channel County Park, located on the bay side, is primarily a day use park offering picnicking and bay beach facilities. North Padre Island County Park and Port Aransas County Park are located on the Gulf side and are developed for recreation vehicle (RV) camping, day use of the beaches, and public pier fishing. Other public recreational facilities include Mustang Island State Park and a municipal harbor in Port Aransas.

Presently, the only development at the state park is a water exchange pass which is utilized for fishing. Construction has begun on the remainder of the park and is scheduled to be completed by

August of 1977.[72] The completed park development will include parking areas for fishing and day use; a 48 unit, multiple use (RV and tent) camping facility; an undeveloped, beach camping area supporting 200-300 units; and interpretation and administration centers.[73] All development is planned for the Gulf side of PR 53 leaving the bay side, tidal flats undeveloped. Once finished, this state park will be a major new attraction to Mustang-North Padre Island.

Private recreational development is concentrated in Port Aransas and Padre Isles. The harbor at Port Aransas has private marinas and party and charter fishing boats. Also, condominiums, vacation homes, and private RV parks provide accommodations for the tourists. A small number of tourist services, such as food stores, tourist shops, entertainment, and service stations are centered in Port Aransas.

Recreational facilities associated with the Padre Isles development consists of several condominiums, including five elaborate units fronting the Gulf, single-family homes, and a country club. The Padre Isles master plan calls for extensive housing and condominium development, commercial services, and a marina on the Laguna Madre. Few tourist services currently exist in the immediate vicinity of the development.

In addition to recreational use of the publicly and privately developed facilities, much unregulated use occurs on the undeveloped portions of the island. This use is most intense on the beach with sunbathing, swimming, camping, and surf fishing the predominant activities. Hunting and fishing occur on the bay side of the island but to a lesser degree.

Total annual use levels have not been measured directly. However, the U.S. Bureau of Outdoor Recreation estimated total visitation to Mustang-North Padre Island to be approximately 953,000 in 1966.[74] Visitation has grown substantially since then. Present recreational use of the three Nueces County Parks on the island alone is estimated to be one million users annually.[75] Additionally, annual traffic flow to and from the island over the John F. Kennedy Causeway rose to greater than 4.5 million vehicles in 1976.[70] Although this data does not actually measure the recreational use of Mustang-North Padre Island, it does suggest that such use has become heavy.

Recreational use of the island varies seasonally. Heaviest use occurs during the summer season which extends from Easter to Labor Day.[76] Monthly tabulations of traffic flow to and from the island over the John F. Kennedy Causeway indicate that heaviest activity occurs in June, July, and August (Appendix B).[70] During these months, the population of Port Aransas swells to over 30,000 seasonal residents.[56] Much summer activity is also recognized as day use from Corpus Christi and other local areas. Additionally, many recreationists arrive from more distant Texas metropolitan areas, such as Houston, San Antonio, and Dallas/Fort Worth.[77] Winter recreational use of the island from December to March is much lower. The local day use and Texas resident visitation give way to tourists escaping winter cold in the Midwest and Canada. These "Winter Texans" are primarily retired, of rural origin, and reportedly spend less money than summer tourists.[17, 76]

Factors Significantly Influencing Recreational Use and Development

Several factors exist which enhance recreational use and development of Mustang-North Padre Island. Perhaps the most obvious factor is that the island has a considerable amount of undeveloped land which is accessible by highway. This means that there is substantial room to expand the recreational development beyond that which currently exists. This undeveloped property is privately owned, with the exception of Mustang Island State Park, and is held largely by real estate development firms. Therefore, the owners of the undeveloped tracts do not wish to preserve them in their natural state, as some large ranchers on other islands may, but are anticipating further subdivisions and development of the land.

Utilities serving the largest tract of undeveloped land are already installed or are being planned. Sewer lines, water lines, and electric power extend south down the island from Port Aransas, as evidenced by the water towers, pump stations, and power lines visible from PR 53.[56] Plans to expand the water line on the island from Corpus Christi to serve the state park, Port Aransas, and Harbor Island are being devised by the Coastal Bend Council of Governments.[78] Utilities are available in Padre Isles, as well, and water is sold to them by the City of Corpus Christi. The development also has its own sewage treatment facilities, which are operated under contract by city employees.[79]

Another factor which enhances further growth of recreational activities of Mustang-North Padre Island is the wealth and variety of attractions on and near the island. Visitors to the Padre Island National Seashore must travel through Mustang-North Padre Island,

and therefore contribute to its use as a result of stopovers. Corpus Christi is close by and is linked by an adequate access route. Consequently, tourists can visit a relatively pristine island and an active metropolitan center in a single trip. This proximity of Corpus Christi also provides a large day use market from which the island can draw visitors. As the tourist industry in Corpus Christi grows, for instance, so does potential tourist use of the island.

The acceptance of the bond issue for the new convention center complex in Corpus Christi is a reflection of the community's goals for the continued growth of tourism in the region. This supportive community attitude is shared by both the political and business leaders of the city, although many of the politicians also have expressed the need for adequate planning to avoid environmental problems associated with haphazard growth.[80] A manifestation of the positive attitude toward growth through planning control is the suggested annexation of the Padre Isles development by the City of Corpus Christi. This annexation would provide the City with increased control over development on the island. However, the issue is politically controversial at this time due to objections from the residents of nearby Flour Bluff, who were annexed several years ago but have not as yet received equal city services.[79] Therefore, annexation of Padre Isles is not likely to occur soon.

The final factor enhancing recreational use of the island is a trend toward an increase of visitors from Houston, the second largest market center in Texas.[56, 77] Several reasons may be causing this increase. The crowding on Galveston Island is a possible deterrent to continued visits there, causing Houstonians to travel further

to enjoy a less intensively used island. The most direct route to Mustang-North Padre Island from Houston, U.S. Route 59, has been continually improved and will eventually become a direct divided highway. Finally, substantial city growth has occurred in the southwest portion of Houston, creating suburbs closer to the island area than the city proper. Whatever the reason or combination of reasons, increased visitation from the Houston metropolitan area could substantially enhance the recreational use and development of Mustang-North Padre Island.

Just as enhancing factors exist, there are those factors that inhibit the growth of recreational use and development on the island. For instance, the real estate companies which own and, in some cases, are developing the property on the island are encountering severe financial difficulties. At Padre Isles, for example, the beachfront condominiums are often vacant and the development of single-family residences is well behind schedule.[78] Also, financial problems have already forced the bankruptcy of liquid assets (not property) of one large developer whose proposed project was near Port Aransas.[56]

One reason for the delay in the development of Padre Isles is that the application process for the U.S. Army Corps of Engineers dredge and fill permits has been extremely slow.[56] Development plans call for man-made canals to be built throughout the project. The dredging of new canals, filling of property, and a proposed marina on the Laguna Madre have been effectively halted as a result. This is also a disincentive for other developers to establish new projects. As long as a Corps of Engineers permit is required and

the review process involves a variety of other agencies and interests, the development of any new private facilities which include dredging or filling of wetlands will be severely hampered.[44]

Another inhibiting factor is the capacity of the north access approach and internal roads for heavy vehicle traffic. Long waits are occurring at the ferry in Port Aransas during peak weekends indicating occasional overloads of this access approach. Increased traffic loads will be further delayed here unless improvements are implemented. If the capacity of this access approach is enlarged, there is a possibility that PR 53 will be overloaded. Standing water on this road is a common occurrence which impedes traffic during periods of heavy rain. Expansion of the internal access routes will correspondingly be necessary with a substantial increase in traffic volume.

A controversial issue currently being discussed which can adversely affect the growth of recreational use and development of the island is the proposed Harbor Island deep-draft port. Citizens have expressed concern over the effect of extensive dredging, filling, and diking around Port Aransas as specified in the port's plans.[81] Complaints include greater flood danger due to extensive filling, destruction of wetlands, and the likelihood of increased pollution. The public hearings and dredge permit reviews have not been completed, so the future of the Harbor Island deep-draft port is as yet unsettled.

In summary, the present and future uses and development of Mustang-North Padre Island are influenced by a diversity of factors. As a result, the island has great potential for providing a variety of

recreation opportunities. However, the future options concerning the amount, direction, and character of the island's development are also extremely diverse and include non-recreation, as well as recreation possibilities. Consequently, priorities must be weighed with considerable forethought so as to maintain a balance of wise uses of the island resource.

Padre Island National Seashore

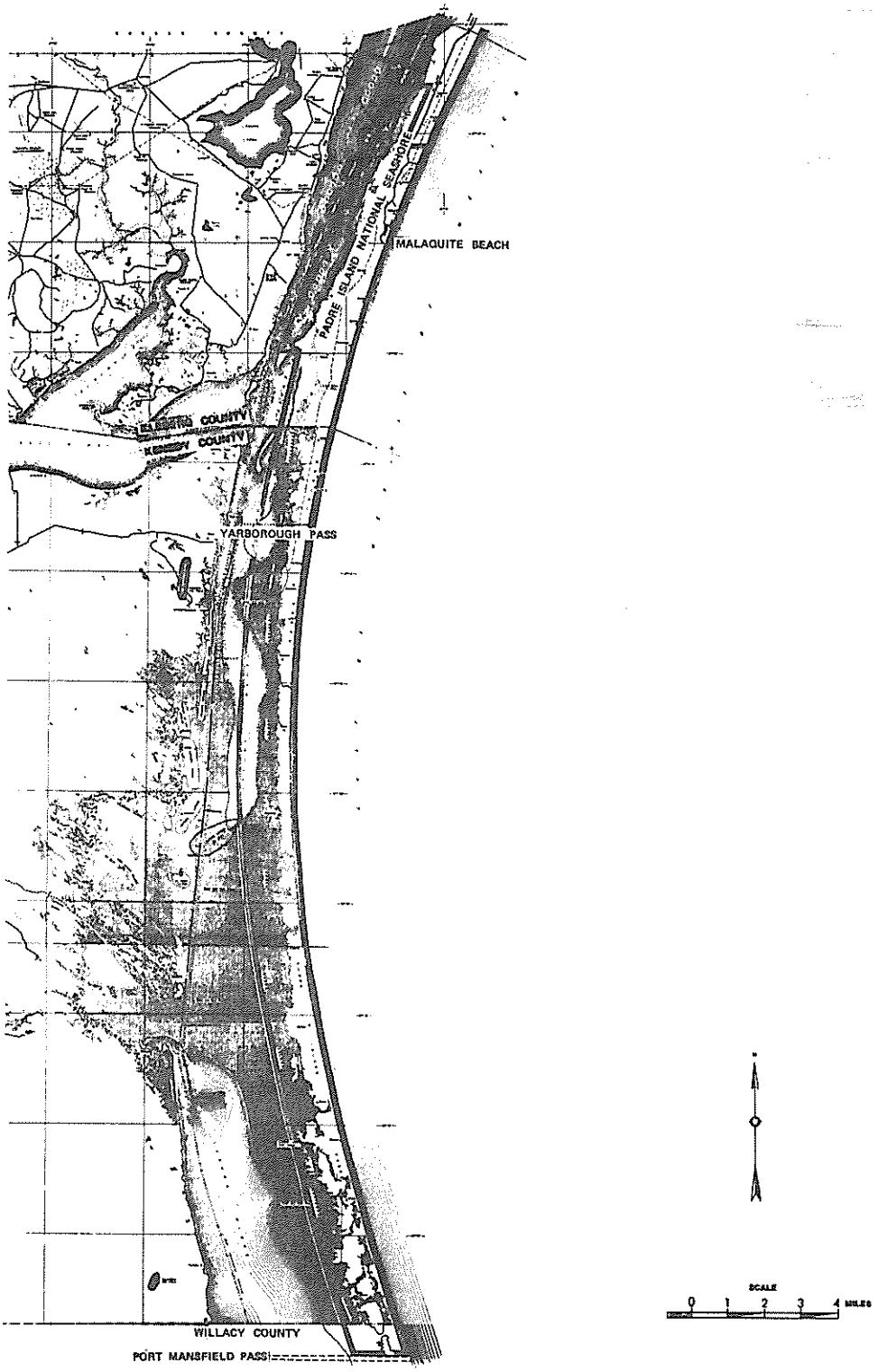
Island Orientation

Padre Island National Seashore is the only Federally owned and managed recreational facility on the Texas barrier islands.[82] Under the control of the National Park Service (NPS), U.S. Department of the Interior, the Seashore occupies the central portion of Padre Island on the lower Texas coast. Its northern boundary is about ten miles (16 km) south of the John F. Kennedy Causeway which links Padre Island to Corpus Christi. The Seashore extends 80.5 miles (130 km) south to the Port Mansfield Ship Channel and is included within Kleberg, Kennedy, and Willacy Counties.[83] It ranges from one-quarter mile to three miles (.4 to 4.8 km) in width and encompasses approximately 134,000 acres (54,230 ha).[84] The Laguna Madre separates Padre Island from the mainland (Figure 8).

European settlement of the seashore portion of Padre Island began in about 1800 with the establishment of a Spanish cattle ranch. Grazing and ranching continued to be the major activities on the island for more than a century until the 1950's.[85] During this decade vehicle access was provided by causeways at the northern and southern

PADRE ISLAND NATIONAL SEASHORE

Figure 8



extremes of Padre Island and a ship channel was dredged across the island at Port Mansfield. These developments suggested to environmentalists that Padre Island could easily lose its pristine character, thus providing the impetus to begin considering the island for national park status.[86] The National Park Service initiated field studies of the island in 1958 and recommended that the central portion be acquired for the National Seashore system.[85] Congress complied in 1962 by enacting legislation creating the Padre Island National Seashore.[87] In this original legislation $5 million was authorized for acquiring the property within the Seashore boundaries. However, land costs rose dramatically as a consequence of the designation of those boundaries. In response Congress authorized additional appropriations in 1968 and 1969 totaling over $10 million.[88] Despite the additional funds, excessive land costs prevented acquisition of any property south of the Port Mansfield Ship Channel, with the exception of eighteen acres (7.3 ha) purchased in two small parcels and the beach below mean high tide donated by the state government.[89] Enough property was acquired north of the channel, however, to permit the official opening of the Seashore in 1968.

At present, Padre Island National Seashore remains largely primitive. Since recreational facilities have been developed at the northern end, about 90 percent of the use is concentrated there.[83] Scattered petroleum drilling operations are within the park boundaries, but they are generally unobtrusive.[90]

Property immediately adjacent to the Seashore on Padre Island is privately owned in both the northern and southern sections. As of

yet it is undeveloped, although active construction of Padre Isles, a resort subdivision community, is occurring eight miles (13 km) north of the Seashore. On the adjacent mainland, land uses consist of agriculture, grazing, and mineral extraction.[83] This land is also largely undeveloped and sparsely populated.

Vehicular access to Padre Island National Seashore is possible from the north only. Vehicles reach Padre Island by way of Park Road 53 (PR 53) from Port Aransas and the John F. Kennedy Causeway from Corpus Christi, approaching the Seashore itself on the two-land Park Road 22 (PR 22).

Within the Seashore, conventional motor vehicles can travel the northernmost fourteen miles (22.5 km) using paved park roads and a section of the beach (except in restricted, swimmer safety zones). Below these northernmost fourteen miles only four-wheel drive vehicles can negotiate the beach south to the Port Mansfield Ship Channel. Likewise, only four-wheel drive vehicles can reach the dredged channel from South Padre Island, although they are unable to cross it. Despite the four-wheel drive vehicle access to the remote sections of the beach, the neighboring island interior remains largely secluded. Although visitors may hike into the interior from the beach or reach it by boat from the bay, park personnel do not encourage such travel because the interior wetlands can be extremely hazardous.[91]

Padre Island National Seashore as a Recreational Resource

The natural attractions of Padre Island National Seashore as a recreational resource are comparable to the Texas barrier islands in

general. Of particular note here are the pristine areas in the central and southern portions of the Seashore.[92] Certain remote stretches of the southern beach are known for their abundance of shells. Wildlife, especially migratory birds, are also very numerous and visible. Additionally, Seashore personnel are using their interpretive facilities to present the early and recent history of the island.

Recreation facilities are concentrated in the northern portion of the Seashore. Facilities for intensive recreational use are provided at Malaquite Beach. This area includes a guarded swimming beach on the Gulf, recreational vehicle (RV) camping, concessionnaires, comfort stations, interpretive facilities, and road access to the Laguna Madre. In addition, on the two sections of beach adjacent to Malaquite Beach, chemical toilets and trash receptacles are provided for campers and day users. Facility development, similar to Malaquite Beach, is scheduled for the Port Mansfield Ship Channel area at a future date.[93]

Considerable recreational use of undeveloped areas occurs, as well. Waterfowl hunting is permitted on the waters of the Laguna Madre. Fishing on the bay shore and surf fishing on the Gulf beach are also popular activities. Notable wildlife observation sites are the North and South Bird Islands in the bay at the north end of the Seashore. Primitive beach camping is allowed in the more remote sections.

The 1976 visitation to Padre Island National Seashore totaled 968,109.[94] Annual visitation was greater than 900,000 in 1971 and 1973, as well, but it declined to 796,325 in 1974 probably due to the higher cost and general unavailability of gasoline.[95] Since then, it has begun an upward trend once again.

Use of the Seashore varies substantially by season, as illustrated in Figure 9. In 1976 monthly visitation was highest in the summer months of May, June, and July. Day use constituted about 90 percent of this visitation.[94] These day users are recognized as being mostly of local origin.[95]

In the autumn and winter months, visitation drops to a much lower level. In 1976 the months of January, February, and March, along with October, November, and December, accounted for only 28 percent of the annual visitation. The proportion of overnight campers increases to between 20 and 25 percent of the total use in the three winter months of January, February, and March. Obviously, day use still constitutes the majority of the visitation, but the impact of the "Winter Texans" arriving from the Midwest and Canada can also be seen from these percentages.

Factors Significantly Influencing Recreational Use and Development

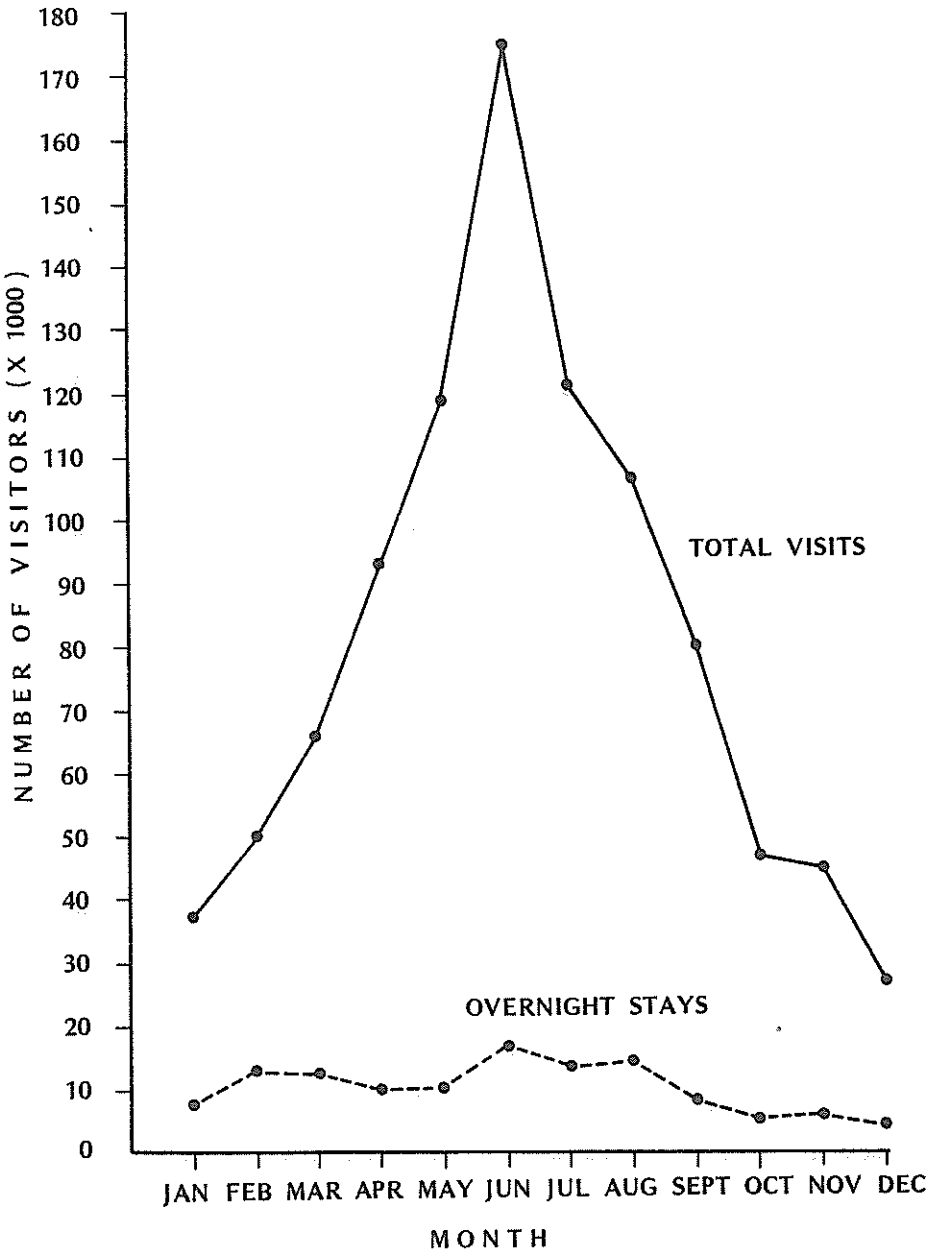
Since Padre Island National Seashore is under the sole jurisdiction of the NPS, the originating legislation, NPS planning and management guidelines, and planning documents generated specifically for the Seashore dictate its future direction. According to the policies described in these sources, the management objectives for the Seashore include the provision of recreation opportunities and the protection of the primitive nature of the island's resources.

The terminology used in the originating legislation stressed the provision of public recreation as the primary goal for the Seashore.[96]

Figure 9 Padre Island National Seashore

Monthly Public Use

(1976)



Source: National Park Service

This reflects the NPS policy that National Seashores are included within the overall management category of National Recreation Areas. As such, the management criteria underpinning planning efforts for the Seashore emphasize the provision of high capacity, readily accessible opportunities for multiple recreational activities.[97]

These criteria have been tempered by subsequent NPS planning and management guidelines. Current guidelines state that the management objectives of a NPS area may be modified from the original criteria to be park-specific in nature, based upon the characteristics of that area's resources and recreational use. The objectives may encompass one or both of the general goals, providing for visitor use or preserving the natural resources.[98]

Under the framework of these guidelines, the NPS produced a master plan and a natural resources management plan to direct the recreational use and development at the Seashore. The management objectives conveyed in these two plans follow the dual format of serving the visitor and preserving the resource.[99] These objectives are generally accomplished by spatially segregating high density use areas from primitive areas, as presented in the Seashore's master plan.

Ultimately, the plan calls for the development of two intensive use areas in the northern portion of the Seashore with access provided by paved roads. One already exists at Malaquite Beach, while the other will be constructed at Yarborough Pass. An intensive use area at the opposite end of the Seashore will be located immediately south of the Port Mansfield Ship Channel. Ferry access will be provided from the Town of Port Mansfield on the mainland. Between the

northern and southern facilities, an internal transportation system will be established. The form of that system has not yet been determined, although in the plan a paved road extending the length of the island has been eliminated as an alternative. It is more likely that the NPS will provide access along the remote beach areas through the use of a controlled transportation system which uses "beach buses."[95]

The plan is actually only a guide for development. It can be modified as a result of certain factors, like intensity of use. If facilities are continually overcrowded, additional development not included in the master plan may occur. This additional development, if needed, would probably be located between Malaquite Beach and Yarborough Pass. Conversely, if the public does not use the present facilities to capacity, those proposed for the future may be postponed or cancelled.

Closely related to the factor of demand for recreational facilities is the ease of access. This is especially applicable in relation to the proposed Port Mansfield Ship Channel facility and the adjacent primitive areas. Currently, no public access to the area exists and use levels are correspondingly low. When ferry service begins, use will inevitably increase. If Park Road 100 is extended to the channel from South Padre Island, demand would undoubtedly grow further.[100] The construction of a causeway to Padre Island from Port Mansfield would stimulate demand for recreation facilities even further. Due to this demand/access relationship, the form of the access provided to this presently remote southern portion of the Seashore becomes an important factor influencing its future recreational use and development.

Another factor which can modify the master plan is the complex web of Federal bureaucratic procedures. For example, proposed developments may be stalled due to funding obstacles. Also, carrying capacity studies, impact assessments, site plans, and other required procedures must be carried out before new facilities can be constructed. As a result of these procedural requirements, the proposals of the master plan may be delayed in implementation, altered in form, or perhaps postponed indefinitely.

In spite of the effect of the modifying factors mentioned above, the present and future recreational development of Padre Island National Seashore is generally guided by its originating legislation, management guidelines, and planning documents. As a result, the options for the direction of future development are fewer at the Seashore than they are on the other Texas barrier islands. These options are to provide recreational opportunities related to beach use and camping and to protect the primitive character of the island resource, a combination of objectives which is unlike that of the other islands under study.[101] In the future, because of this combination of objectives, the Seashore will provide a great contrast to the developed and developable areas immediately to the north and south of its boundaries.

South Padre Island

Island Orientation

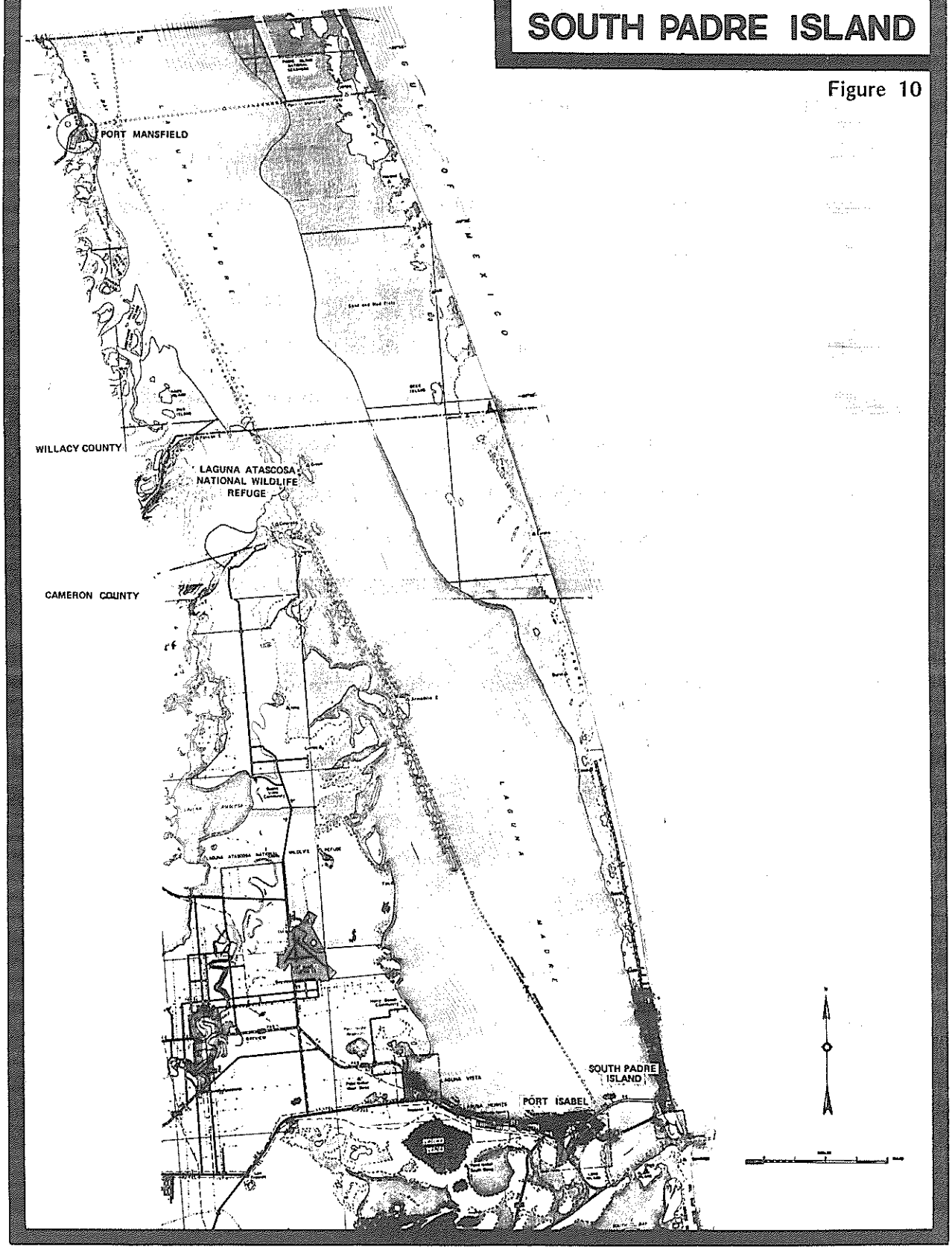
South Padre Island is located directly south of Padre Island National Seashore and is separated from the Seashore by the Port Mansfield Ship Channel. South Padre Island extends 34 miles (54.7 km)

south from the channel and ranges from one-quarter to four miles (.4 to 6 km) in width with a total area of approximately 40,000 acres (16,188 ha).[102] It is separated from the mainland by the Laguna Madre which stretches its full length. The island terminates at the Brazos Santiago Pass Ship Channel which links the Brownsville Ship Channel to the Gulf of Mexico. To the south of the channel is Brazos Island. The southernmost 24 miles (38.6 km) of South Padre Island are in Cameron County, while the remaining ten miles (16 km) are in Willacy County (Figure 10).

The natural character of South Padre Island has been influenced by human development since the 1940's. The initial thrust of this development began in 1949 when developer John L. Tompkins received the first title insurance policy to a five mile (8 km) section of land that he had purchased on the southern end of the island. He named the area "Padre Beach" and proceeded to lay out the first subdivision plats, build the original water line, and develop streets. Tompkins also donated 243 acres (98 ha) for a park which is today the Andy Bowie County Park. The remoteness of the island restricted major development until 1954 when the first Queen Isabella Causeway was completed. The causeway provided automobile access to South Padre for the first time. Even though access was available and preliminary services were provided, prospective landowners and builders were unable to obtain insurance coverage due to the island's susceptibility to flooding and hurricane damage. As a result, the island did not develop rapidly during this time.[102]

SOUTH PADRE ISLAND

Figure 10



The issue of securing adequate insurance coverage was relieved in 1971 when the Texas Catastrophe Property Insurance Association was created by the State of Texas to provide hurricane insurance for the area through a pool of casualty insurance companies operating in the State. In effect, the availability of adequate insurance coverage allowed developers to achieve the financing they required to begin their construction projects.[102]

The availability of insurance in 1971 proved to be a turning point in the development of South Padre Island. The pace of development began to quicken as a result of a combination of additional factors. In 1973, the small community at the south end of the island incorporated into the Town of South Padre Island. For the first time, the island's residents could begin directing their own future. While the predominant feeling of the resident population was that growth was needed and that more of the island could be developed, their concern for the type of development that should be encouraged was expressed by the formulation of a land use plan shortly after incorporation.[103] This sentiment is still evident today in that the community continues to encourage, control and direct the development of the island.

The next event that contributed to the island's development was the construction of a new Queen Isabella Causeway in 1974. This new accessway was built parallel to the old causeway with a greater traffic capacity. It was also raised over the Gulf Intracoastal Waterway (GIWW), and thus avoided large traffic back-ups associated with the

draw spans on the old bridge. In essence, the causeway provided South Padre Island with a new link to mainland transportation routes and improved the accessibility, and hence, visibility to tourist markets.

At the present time, the own of South Padre Island occupies the southernmost five miles (8 km) of the island and has a resident population of about 400. Development in the town is tourist-oriented, featuring hotels, motels, and condominiums, a distinct contrast to the surrounding mainland where agriculture is predominant. The remainder of the island outside town limits is completely undeveloped and primarily in private ownership. Much of this property has already been subdivided, although it remains isolated in the northern section of the island without road access or utilities.

As previously mentioned, the Queen Isabella Causeway provides the only access to South Padre Island by automobile. The island has one main roadway, Park Road 100 (PR 100), which extends from the Town of South Padre Island to a point approximately ten miles (16 km) north of the town limits. Access to the beach is provided at the northern end of PR 100. From this point the beach can be used by four-wheel drive vehicles to travel to the Port Mansfield Ship Channel on the northern end of the island. The beach can also be utilized to drive south from the end of PR 100 to an access road at Andy Bowie County Park. At the present time, approximately two-thirds of the island does not have paved or gravel roadways. Although within town limits the beach is accessible by way of numerous roadways and public right-of-ways, automobiles are prohibited from driving on the beach by local

ordinance. Despite this vehicle restriction, the perpendicular accessways provide adequate opportunities to utilize the beach.

South Padre Island As A Recreational Resource

South Padre Island offers a wide variety of attractions both directly and indirectly associated with the beach environment. Probably the most important attraction is the climate of the region. Of all the Texas barrier islands, South Padre Island is located in the most tropical climate.[104] The moderate year-round climate and proximity to the Gulf of Mexico are important attributes that provide relief from interior extremes of winter and summer temperatures.

The diversity of both developed and undeveloped landscapes is another attraction that is particularly important to recreation on the island. The southern end of the island is currently being developed and offers resort accommodations and commercial attractions. In contrast, the northern two-thirds is undeveloped and offers visitors primitive experiences ranging from surf fishing, to exploring well developed dune formations, to observing wildlife on the bay side of the island. The fact that visitors can stay in comfortable accommodations, yet still benefit from the primitive qualities of the island a short distance away, undoubtedly contributes to the experience of many visitors.

In addition to its natural attractions, the island offers cultural diversity, exemplified by its proximity to Mexico. By automobile, Mexico can be reached in less than an hour. The opportunity of visiting

the towns along the Mexican border and then returning to an island environment is another attraction of South Padre Island.

Three primary attractions are provided by the public sector. The first, Isla Blanca County Park, has a total of 149 acres (60 ha) and is located at the southern end of the island. The park offers a wide beach where picnic facilities and cabanas are available. Because of the crowded beach conditions during the peak visitor season, certain activity zones are alternated along the Gulf side of the park. For example, surf fishing and picnicking are allowed in specific areas where swimming and surfing are prohibited. Alternately, along other sections swimming and surfing are allowed and fishing is prohibited. In addition, the North Jetty offers access to deeper waters for fishing the Gulf.

The second public facility, the Queen Isabella Fishing Pier, is immediately north of Isla Blanca Park. As the name suggests, the pier was converted from its initial use as the original causeway to the island. As such, it spans the full width of the Laguna Madre except for a short section near the mainland where it crosses the GIWW.

The third public recreation facility is Andy Bowie County Park. The park separates the developed and undeveloped sections of the island and is largely undeveloped. There is one privately owned amusement facility within the park boundaries, as well as a public fishing pier. Generally, the park is in a relatively natural condition and provides access to some of the natural features of the island. Presently, there are no accessways to the Laguna Madre side of the island from the park. However, the entire area is open for hiking and fishing.

The recreational opportunities developed by the private sector have sought to capitalize on the natural appeal of the island. As such, most of the development is tourist-oriented. In 1969, there were ten hotels and motels located on the island.[105] By the end of 1976, the inventory of hotels, motels, and condominiums totaled 37.[106] All of the commercial development is currently contained within the Town limits of South Padre Island. There are approximately 70 trailer and recreational vehicle (RV) spaces available at three locations. It is the opinion of local officials that people who visit the island and bring their own trailers or RV's do not appear to spend as much money as those who stay in hotel rooms. As a result of this belief, further trailer or RV park development will probably not be encouraged in the future.[103]

The private sector provides a variety of recreational facilities associated with the major resort complexes, such as swimming pools and tennis courts. There are also four privately owned boat ramps, along with three marinas that provide wet slips for boat storage.[107] In addition, there are charter and party boat operations located on South Padre Island.

Associated with the tourism emphasis of the island's economy are an undetermined number of second homes used by visitors and part-time residents. An on-site inspection of existing recreational housing revealed that of the total private development on the islands, second homes represent only a small portion, with most of the platted lots within the town limits being undeveloped. As a result, investment to date has been predominantly in hotel, motel, and condominium

developments suggesting that visitors prefer to rent or lease accommodations, as opposed to purchasing sufficient property and building second homes. Recognizing that the majority of the existing development on the island has occurred only since 1969, it is as yet difficult to determine a distinct trend in housing preferences.

Annual recreational visitation to South Padre Island has never been measured directly. However, the traffic counts indicate that over 1.5 million vehicles crossed the Queen Isabella Causeway to the island in 1976.[108] This figure is larger than that of any previous year and supports the assumption by local officials that the number of people visiting South Padre Island continues to increase (Appendix C). Because South Padre Island has a relatively small resident population, the consistent increase of traffic flow over the causeway provides some understanding of the yearly increase in visitation.

In addition, the traffic counts provide one of the few empirical measures of seasonality of the tourist trade. Summer represents the peak tourist season with greatest visitation occurring during the months of June, July, and August.[108] During these months visitors are characterized as being predominantly residents of the nearby Rio Grande Valley who seek relief from the hotter interior climate and Mexican citizens who envision the island as a unique resort for the wealthier classes. The opinion has also been expressed that more Texans from the northern and western sections of the state are beginning to vacation on the island, as well.[103, 109]

Recreational use of the island is less intense during the winter months. The majority of the visitors are reported to be "Winter

Texans" from the upper Midwest, who generally vacation in the Rio Grande Valley and travel to the island primarily for day use purposes.[109] While there is little empirical evidence to suggest why winter tourists do not stay longer periods of time on the island, one explanation may be the limited number of trailer and RV accommodations that most of the Midwestern vacationers depend upon to reduce costs and increase traveling flexibility. As a result of the characteristics of the winter season, it has considerably less impact on South Padre Island than does the summer tourist season.

Factors Significantly Influencing Recreational Use and Development

There are a number of factors that enhance the future recreational use and development of South Padre Island. One of these is the existence of large tracts of undeveloped land north of the town limits. In essence, the vacant land represents a large development potential for both public and private investment. As usable land within the town limits is developed, the importance of these large tracts will become increasingly evident. Additionally, if PR 100 was extended farther north, much more of this land would be accessible, and hence, developable.[103]

Another significant factor that contributes to increased recreational use and development of South Padre Island is the community attitude supporting the growth of tourism. This is manifested in the particularly high priority given public works projects, such as the recently completed sewer system designed to accommodate considerable future growth of the town's tourist development. In addition,

many of the interior roadways in the town are unpaved and lack adequate drainage during periods of rainfall. Improvements to rectify these problems are currently being proposed by local officials. In general, the community supports the goal of developing South Padre Island into a major resort attraction.[103]

As a step towards accomplishing this goal, the South Padre Island Tourist Bureau was created in 1976 to conduct extensive promotional campaigns designed to attract tourists from market areas both within and outside the State of Texas. The Bureau is subsidized by a three percent hotel occupancy tax which generated $150,000 in 1976. As directed by local ordinance, 70 percentof this revenue must be spent for advertising to promote tourism on the island.[103] Tourist use will inevitably increase as potential visitors from new market areas become aware of the recreational opportunities there.

Another factor that further enhances development of the island is the existence of nationally known hotels. The fact that these firms have invested in and developed on South Padre Island indicates a degree of confidence in its future growth and visitation. While few definitive conclusions can be made from the existence of this development, it does illustrate the community's ability to convince investors that indeed South Padre Island will become increasingly more popular as a tourist resort.

There are factors that may inhibit the growth of South Padre Island in terms of both resident population and increased tourist trade. For example, large tracts of land within the town limits are currently undevelopable because they are periodically flooded or are

naturally marshy. Efforts are currently underway to obtain the necessary permits to fill and develop these areas. The U.S. Army Corps of Engineers and other agencies involved in the permit process have become increasingly reluctant to approve such projects.[44] As a result, marketable tracts of land that could otherwise contribute to the tax base of the town are currently unproductive in terms of generating municipal revenue.

Just as marshiness inhibits development in the island interior, beach erosion may likewise hinder development along much of the Gulf side of the island. Although no beach front buildings are presently being undermined, most of the beaches within the town limits are actively eroding, with the exception of those nearest the North Jetty.[110] This must be considered in planning for future development to avoid locating structures where they will be endangered by the active erosion.

Another fact that is already restricting local recreational use and development is the distance between the island and potential user markets. No direct air service is provided to South Padre Island. Air transportation is available to the Rio Grande Valley, but to reach the island visitors must commute by car or bus. Mustang-North Padre Island, for example, is approximately 200 miles (322 km) closer to the population centers of Austin, San Antonio, Houston, and Dallas-Ft. Worth and offers recreational attractions and scenery similar to those on South Padre Island. While advertising campaigns seek to overcome this disadvantage, the variable of distance ultimately tends to restrict development of the island's tourist trade.

As presented earlier, one of the goals of the Town of South Padre Island is to extend PR 100 further north to the Port Mansfield Ship Channel. The achievement of this goal appears to be critical to the development of the northern section of South Padre Island. Already, large sections have been subdivided, but without the extension of roadways and utilities potential buyers and investors are reluctant to purchase the land. The trade-off is that as long as the northern end of the island remains undeveloped, opportunities will exist to experience the primitive island environment. However, as development occurs, human attractions will replace those that occur naturally.

Development of the utilities needed to open the northern section of the island depends upon additional revenue generated mainly through property taxes. However, the ability of the Town of South Padre Island to levy these taxes is restricted as a result of its small resident population. Under State law, a community with less than 600 residents can only levy property taxes equaling $0.25/$100 valuation on 80 percent of the appraised value.[103] In comparison, the City of Galveston levies $1.25/$100 valuation as revenue for providing its city services.[111] Consequently, the tax burden on the town's few residents will continue to grow, if services are to be expanded, perhaps tempering the community's desire to increase its tourist trade.

In summary, South Padre Island has experienced a significant increase in its recreational use and development during the past several years. However, of the total resource about three-quarters remains

undeveloped, and there is, therefore, a diversity of both natural and human attractions. Future growth of South Padre Island will rely in part upon the success or failure of the community to attract tourists from new markets by promoting it as an island resort. Events occurring in the near future will likely determine whether the island becomes a highly developed coastal resort or retains most of its natural qualities. The question does not appear to be whether or not recreational opportunities will be available, but rather whether they emphasize human development or natural features.

Summary

Previously, each island has been described individually. This fragmented analysis cannot provide full understanding of the character of the Texas barrier islands as recreational resources. To do this, the islands must be examined as a system.

The Texas barrier islands in their entirety present a wide variety of recreational opportunities. They include both highly urbanized and virtually untouched areas. Additionally, many miles of beaches are available with sections that are both intensely utilized and essentially secluded. The seasonality of use exhibited along the entire coast also provides numerous options for varied recreation experiences. Facilities for day use, overnight camping, and long vacations are all found on the islands. Furthermore this diversity in the recreational use of the islands can continue to increase, since so much island acreage is as yet undeveloped.

As the individual examinations of the six island regions reveal,

the natural, social, institutional and economic factors that dictate the direction of future recreational use and development are also extremely varied. In the format presented, each individual group of factors only provides insight into that island from which it was derived. For this reason it is once again necessary to examine the islands as a system to comprehend the underlying reasons for the relative intensities of recreational use and development that occur.

Under this broader perspective similarities among the islands on seemingly diverse factors become apparent. Certain issues stand out as being of greater importance than others. Consequently, the numerous individual influences, when examined more closely, can be synthesized into four critical factors affecting recreational use and development on the barrier islands:

1) the accessibility of the island;

2) the proximity of the island to user markets (i.e., metropolitan areas);

3) the availability of utilities (i.e., water, sewer, and electricity); and

4) the presence or absence of institutional controls and influences.

The ease of access to the island is the single most important factor influencing the intensity of its use. The predominant means for gaining access, where indeed access is available, is by causeways and ferries, both of which allow visitors to reach the island by automobile. Use and development on the barrier islands without such access is considerably less than on those with it. The absence of access to Matagorda and St. Joseph Island, for example, has

severely restricted their recreational use.

Where access to the island is available, the proximity to a highly populated, urbanized region corresponds to those islands where use and development are most intense. For example, Galveston Island is only a short distance from the Houston metropolitan area, while Mustang-North Padre Island and, to a lesser extent, Padre Island National Seashore are adjacent to the metropolitan area of Corpus Christi. The populations of both metropolitan areas exert intense demand for recreational use of the nearby islands.

Where there is readily available access to the resource by potential users, the problem of establishing adequate utilities has influenced the extent of recreational use and development. Where utilities are limited or non-existent, use and development are minimal, such as on the northern section of South Padre Island. The extension of utilities northward from the town of South Padre Island appears to be critical, if indeed South Padre Island is to be more intensely used.

The fourth variable relates to the extent of institutional influences and controls on the recreational use and development of the island. At one extreme is Galveston Island with its complex set of local governmental influences, such as building codes, zoning restrictions, service districts, and municipal regulations.

On other islands the institutional influences may be just as powerful. Padre Island National Seashore and the public property on Matagorda Island are examples of this situation. At the other extreme is St. Joseph Island which is under the complete control of one

private owner. There are few institutional restrictions as to what the owner can or cannot do with his property. The privately owned tract on Matagorda Island falls under this same category. Depending upon the degree to which institutional influences and controls are present, their complexity, and the agencies involved, the importance of this factor will vary among the islands. On some it may be very significant, while on others the three preceding factors may outweigh it.

With the four critical variables identified and defined, it is possible to compare the islands as to the combinations of those variables present, ultimately ranking them according to their relative intensities of recreational use and development. The results of this ordering are summarized in Figure 11. From the information and data presented, Galveston Island is characterized to be the most intensely used and most heavily developed barrier island on the Texas coast, far in excess of the others considered in this study. Likewise, Mustang-North Padre Island, South Padre Island and Padre Island National Seashore are determined, in descending order, to be less developed, and in comparison with Galveston Island receive less use, even though there is evidence that extreme crowding occurs during peak periods of the year. The least developed and used, respectively, are Matagorda Island and St. Joseph Island.

Summarizing Figure 11, Galveston Island and St. Joseph Island represent the extremes in terms of recreational use and development, and their relative ranking is important to recognize. Whether or

Figure 11

Relative Intensity of Recreational Use and Development

(Existing)

HIGH

Galveston Island

MEDIUM

Mustang-North Padre Island
South Padre Island
Padre Island National Seashore

LOW

Matagorda Island
St. Joseph Island

not a region is ranked number two or number three is not the purpose of this ordering process. What is important is the relative distribution of the regions among the high, medium, and low intensity use and development categories. At the end of the next chapter, this ranking process will again be used to determine a similar distribution after anticipated changes in use levels have been discussed. At that time, the two figures will be compared and a determination will be made as to what differences in relative use intensities may occur based upon existing situations, so that the information presented thus far becomes a baseline against which future changes can be measured.

CHAPTER III

THE FUTURE OF RECREATION ON THE TEXAS BARRIER ISLANDS

The Texas Gulf Coast barrier islands currently provide a developed and underdeveloped resource base upon which a variety of recreational opportunities are present. The availability of these opportunities has been largely determined by the factors of access to the resource, proximity to metropolitan areas, availability of utilities, and presence or absence of institutional controls and influences. The fact that these four variables have largely determined the level of present recreational use and development on each barrier island suggests that, to varying degrees, they will be of importance in determining future recreational use and development, as well. To assume that they will be the only influences affecting the future of recreation on the barrier islands would ignore the fact that social attitudes and preferences change with time. However, these four variables, tempered by certain modifying influences, can be used to gain considerable understanding of the processes and pressures occurring that shape future recreational use and development on the islands.

There are numerous modifying influences that will change existing social attitudes and developmental patterns in the future. Undoubtedly, many of them have been considered in the previous public

and private resource allocation decisions that have resulted in the current recreational use and development patterns evident on barrier islands. However, certain social and institutional factors appear to be particularly important to the future recreational use and development of the islands.

For example, the availability and cost of fuel for transportation to and from the coast will influence future recreational use and development intensity. If gasoline becomes increasingly scarce and expensive, it can be expected that potential visitors may decide to seek alternative destinations closer to their homes. This could be a critical factor determining the success or failure of some island communities' efforts to attract distant tourist markets. This also has implications for the development of public recreation facilities located great distances from potential users.

The dependency of local or regional economies on revenue acquired from providing recreational facilities and opportunities will be important in determining the kind of recreational use and development available in the future. As presented previously, the recreational opportunities that currently exist are more oriented to non-resident populations who travel to an island for a visit and then return home. Considerable economic investment by both the public and private sectors has already been made to provide island-based recreational facilities for these visitors. If there is a change in economic priorities from creating additional recreational opportunities to, for example, the development of port facilities or heavy industry, the net effect

will be a reduction in total resources available for future recreational use and development.

A third factor that may influence the availability of future recreational opportunities on the Texas barrier islands will be Federal programs like the National Flood Insurance Program. Currently, this particular administrative program appears to have little, if any, influence on existing developmental trends on the barrier islands. However, there is the possibility that this program, or one similar, may soon redirect construction of second homes, resorts, and commercial developments on the islands through sanctions against building in areas subject to frequent flooding.[112] The National Flood Insurance Program is mentioned in summary form here only because it may be an important determinant in the future.

Closely associated to the potential regulatory authority contained in flood plain management are existing regulations associated with the use and development of bay shorelines and wetlands. The ability of the U.S. Army Corps of Engineers to restrict wetland development through its permitting requirements has already inhibited development on the barrier islands where use intensities are increasing. If this policy continues as current indications suggest, development may be shifted to those areas of the islands that are not affected by the current authority of the Corps of Engineers (primarily dune systems) or to alternate inland locations. Consequently, the possibility exists that governmental restrictions inhibiting shoreline development may be effective in relieving stress on one natural system,

only to place more stress elsewhere. Likewise, economic benefits from increased recreational development may be displaced away from the island communities as a result of a restrictive permit policy. Since the environmental and economic implications vary among islands, the benefits and costs of each case should be considered individually.

The fact that these additional enhancing or inhibiting factors to recreational use and development on the islands are not discussed earlier does not ignore their potential importance. Rather, these factors appear to be specifically relevant issues that have the potential to change existing recreational use and development patterns. They may or may not become overriding issues, but since they appear to be important issues now, they should also be considered in future resource allocation decisions. Taken in their entirety, the factors of fuel availability and cost, local and regional economic priorities, the National Flood Insurance Program, and the permitting responsibilities of federal and state agencies will either reemphasize or modify the significance of the four critical variables of access, proximity to population centers, availability of utilities, and presence or absence of institutional controls and influences.

Although the future is always difficult to forecast, it is possible to achieve some understanding of what opportunities for providing recreational activities may be available through scenarios based on existing information and opinions. The following discussions are not meant to be absolute. Rather, they are meant to be reasonable explanations of what may occur based upon existing situations and future possibilities. To accomplish this objective each region is

presented according to those factors that have determined the existing use and development. To segregate short-and long-term differences, scenarios for the years 1985 and 2000 are used respectively. The scenarios are derived from an analysis and interpretation of information obtained from interviews, published materials, and on-site visits. No assumption is made that the specific events of each scenario will indeed become reality. The importance of the scenarios is rather to illustrate the influences that the salient factors discussed throughout the report might have on the future allocation of resources by the public and private sectors.

Galveston Island

The intensity of recreational use and development on Galveston Island will remain closely associated to the economic vitality and growth of the Houston metropolitan area through 1985. Should the population growth of Houston continue, an increased number of visitors to Galveston can also be expected. The completion of I-45 connecting Galveston Island to Houston will provide easier access to the island's attractions for the growing number of visitors.

The availability of utilities to the western end of the island will be an important factor determining whether or not it will become completely urbanized. After considerable public debate, a bond issue will likely be passed by the resident population for extension of utilities to the rest of the island. The impacts of this decision will probably not be fully realized until after 1985, although there will be increasing pressure on the owners of large tracts of land to sell to

developers due to rising tax obligations. As a result, haphazard incremental growth of recreational subdivisions could be commonplace. This situation may be avoided with the City of Galveston's land-use planning program, but efforts will likely be confined to preserving beach access and acquiring open space for future park development. Galveston Island State Park will receive increasing usage, and by 1985 there will be demands for additional development of recreational facilities. The park's master plan will be modified to accommodate the demand making it increasingly difficult to retain the natural qualities for which the park was initially conceived.

Access to the beaches will become difficult unless adequate land use controls are implemented by the City of Galveston. Consequently, Galveston Island State Park may become a de facto municipal park as urbanization develops around its boundaries. In addition, county beach parks will almost always be overcrowded.

As a result of increased congestion due to visitation from the Houston area and an increase in population density on the western end of the island, a new causeway will be proposed to relieve the overloaded I-45 causeway. Located at the center of the island, the new causeway will probably be under construction by 2000. Expansion of industrial and port-related development on Pelican Island will attract more permanent residents to Galveston, as well as increasing the need for permanent residential development and reducing the available area for recreational use. This demand for a combination of both recreational and non-recreational facilities will result in the nearly

complete development of usable land on Galveston Island for intensive purposes by the year 2000.

Matagorda Island

The decision as to whether the State of Texas or the Federal government will manage the abandoned Matagorda Air Force Base will probably be made by 1980. It will become increasingly evident to the general public that the State and Federal management proposals are not totally incompatible. The Federal government will retain approximately 6,700 acres (2,712 ha) of the southwestern portion of the Base as an extension of the Aransas National Wildlife Refuge. The State will lease, at little or no cost, the remaining access to the property. The Federal government will seek to once again expand Aransas National Wildlife Refuge to relieve pressure by recreational uses being made on existing wildlife habitat near the State-managed area. However, by the year 2000 the State will need to provide more areas for recreational opportunities, and hence considerable debate will take place as to how the newly acquired property should be managed.

St. Joseph Island

The absence of public access to St. Joseph Island will restrict the general public from using the resource in the near future. The operator of the jetty boat currently taking people to the western tip of the island will probably attract more passengers as the service becomes increasingly popular with the public. However, the impact of this use on the island resources will remain negligible. The

current landowner or his heirs will likely continue their ranching activities with little additional development through the year 1985.

During the period between 1985 and 2000, private developers will realize the economic potential of St. Joseph Island as the only remaining undeveloped island in private ownership along the Texas coast. The current owner or his heirs will not respond to their offers, however, since they are already wealthy and are committed to retaining the island ranch and estate within the family. Environmental groups will exert pressure on the Federal government to acquire and preserve the island as well. Despite this pressure, the high purchase price and relative abundance of public property on nearby islands will preclude any such acquisition. Consequently, by 2000 St. Joseph Island will still be unique on the Texas coast as an island entirely in the ownership of a single family. Public recreational use will remain at low levels, only increasing at an extremely slow rate.

Mustang-North Padre Island

The close proximity of Corpus Christi to Mustang-North Padre will continue to influence its recreational use and development in both the near and distant future. Some access systems, like the ferry to Port Aransas, will be periodically expanded to accommodate greater traffic demands. The John F. Kennedy Causeway will adequately serve the higher volumes of traffic it will receive through 1985, since private recreational development will be slow until then. While private tracts will continue to be subdivided and sold, large developers will adopt a "wait and see" attitude, delaying until market prices

and demand increase and observing how existing developments perform in terms of profitability. It can be expected that when investors are satisfied that the market is right, a great deal of building activity will occur and the utilities that are available will be used to their maximum capacity. While the private sector will be relatively dormant until 1985, the public sector will be very active. Specifically, Mustang Island State Park will be completed and will quickly become a regional attraction that will hasten the increased use of existing utilities, access routes, and natural attractions of the island.

As Corpus Christi continues to expand its industrial base there will be a need for more residential housing between 1985 and 2000. Some developers who had anticipated providing retirement or vacation communities may find the economic returns for developing permanent residences more attractive. However, the tourist market will become increasingly lucrative. As a result of these incentives, the private sector will continue in its major role of providing residential services and activity-oriented recreational development.

By the year 2000, Mustang-North Padre Island will develop into a highly desirable destination for increasing numbers of Texas residents and out-of-state tourists. As use and development intensities increase between 1985 and 2000, public sector recreation opportunities will increase only moderately due to the high investment value of the land. The role of the various levels of government providing recreational opportunities will essentially remain the same. The County and State will continue to provide parks for both day use and overnight

camping with increasing intensity, while the Federal government will continue to provide areas for more primitive outdoor recreation experiences and modes of day use development at the nearby Padre Island National Seashore.

The recreation use and development occurring on Mustang-North Padre Island will be extremely high by the year 2000, as it will be one of the most popular weekend and vacation destinations in Texas. Access routes to the island will become very congested and utilities will still be available, but will probably be overloaded. Annexation of the southern portion of the island by Corpus Christi will occur by then bringing increased tax obligations, improved city services, and the possibility of planning for future development. This planning will be extremely important to avoid the potential environmental problems that result from such intense recreational use and development.

Padre Island National Seashore

The fact that the National Park Service (NPS) is responsible for the development and management of Padre Island National Seashore suggests that significant changes to existing and planned development will not occur in the near future (1985). While the proximity and accessibility of Padre Island National Seashore to Corpus Christi will continue to influence use levels, planned completion of the existing master plan will probably determine future development intensity. Visitation will increase slowly in response to the growth of the Corpus Christi area as a tourist destination.

The master plan for Padre Island National Seashore will be fulfilled by the year 2000. Ferry access will be available from the mainland to the Seashore south of the Port Mansfield Ship Channel where day use and camping facilities will be provided. An internal transportation system will be available eliminating the need to allow vehicular traffic on remote sections of the beach. People will be able to drive to the Yarborough Pass facilities in the north, board a beach bus, and be transported to the Port Mansfield Ship Channel. Access across the channel from the bus terminal on the north side to the south side will be provided by a passenger ferrying system. A large section of the Seashore will remain relatively primitive and inaccessible by automobile.

Visitation will increase as Mustang-North Padre Island develops into a popular residential and tourist center. In addition, the NPS will receive increasing pressure for the development of facilities for intensive beach recreation. This will likely require a reevaluation of the master plan by the year 2000 to allow for increased development of the beach area between Malaquite Beach and Yarborough Pass. Despite the pressure, the NPS will maintain its dual objectives of providing opportunities for both intensive and primitive recreational experiences at Padre Island National Seashore.

South Padre Island

The success or failure of the town of South Padre Island's attempts to increase tourist trade will probably be realized by the year 1985. Assuming that the attempts are successful, recreational

development and support facilities will increase substantially within the town limits. Since Andy Bowie County Park physically separates the town from the northern sections of the island, a considerable increase in development intensity within the town limits will be required before it becomes economically feasible to extend utilities north, despite the fact that much of the northern property is already subdivided. During the 1980's economic incentives will increase and plans will be developed for such an extension. The existing access to the island by causeway will be adequate, although PR 100 will need to be improved as the primary artery for vehicular traffic. The private sector will continue to provide activity-oriented recreation opportunities and resort accommodations. The public sector will increase facility development within its present holdings, but additional property acquisition will be precluded by rising land costs.

As a result of increasing development pressure, utilities will be extended to the Port Mansfield Ship Channel by the year 2000. In addition, PR 100 will provide the access necessary for residential, second home, and condominium developments north of the town. Successive annexations will follow, extending the City of South Padre Island's boundaries to include practically the entire southern part of the island. Increasing public interest will be generated for providing direct access from the northern end of the island below the ship channel to Port Mansfield on the mainland. The recreational facilities associated with Padre Island National Seashore immediately south of the ship channel will provide an added attraction for increased

hotel and condominium development in the vicinity. As a culmination of these events, South Padre Island will have progressed considerably toward complete development by the year 2000.

Summary

The scenarios have presented future possibilities concerning the extent of recreational use and development that may occur in the six barrier island regions by the year 2000. The future use and development of the islands has been discussed according to those factors that have historically been predominant in determining what recreational opportunities currently exist. Reiterating, the purpose of the scenarios has not been to predict specific events, but rather to gain a relative understanding of the types of changes that may occur on the islands in the future under reasonable circumstances. To assume that the four factors of:

1) accessibility of the island;
2) proximity of the island to metropolitan areas;
3) availability of utilities; and
4) presence or absence of institutional controls and influences

will be the sole determinants of the future recreational use and development of the islands would not be justifiable. Other factors will also be important as a consequence of changing social attitudes and concerns. Here the availability and cost of energy, local and regional economic priorities, flood plain management programs, and permitting procedures for wetland dredge and fill operations all will

be of some as yet undetermined significance to the long term recreational use and development of the Texas barrier islands. These modifying influences will undoubtedly alter existing or evolving use and development trends on the islands. The modifying factors are not intended to represent a comprehensive list of influences that should be included in future natural resource allocation decisions. They actually represent the minimum input needed to understand the complexity of attempting to articulate a barrier island management policy, if indeed management is desirable.

Using the same criteria presented in the previous chapter for the existing relative intensity of recreational use and development among the Texas barrier islands, a summary of the long-term scenarios is presented in Figure 12. As in the previous comparison, the categorizations illustrate the relative intensities of recreational use and development among the islands that can be expected in the future.

Figure 12

Relative Intensity of Recreational Use and Development

(By the year 2000)

HIGH

Galveston Island
Mustang-North Padre Island
South Padre Island

MEDIUM

Padre Island National Seashore
Matagorda Island

LOW

St. Joseph Island

CHAPTER IV

CONCLUSIONS AND IMPLICATIONS

Based upon the information presented, it can be concluded that all the Texas Gulf Coast barrier islands will receive increased recreational use and development through the year 2000. In some cases, this increased demand for the island resources will be substantially greater than today, while in others recreational use will increase only slightly. Existing and anticipated recreational use and development intensities are compared in Figure 13. In comparing the two, it is evident that while most of the islands are currently ranked in the medium or low intensity levels, in the future three of the six regions studied are expected to experience increases in use sufficient enough to shift them to a higher category.

At present Galveston Island is considered to be the most intensely used and developed barrier island along the Texas coast. While it is expected to retain that position in the year 2000, the difference between its level of use and that of Mustang-North Padre Island and South Padre Island will be less distinct. It is unlikely that use and development intensity will be equal on all three islands, since each has influences unique to its location, physical attributes, and attractiveness as a recreational resource. Consequently, the growing

Figure 13

Relative Intensity of Recreational Use and Development

(Existing compared to the year 2000)

HIGH

Galveston Island

MEDIUM

Mustang-North Padre Island
South Padre Island
Padre Island National Seashore

LOW

Matagorda Island
St. Joseph Island

HIGH

Galveston Island
Mustang-North Padre Island
South Padre Island

MEDIUM

Padre Island National Seashore
Matagorda Island

LOW

St. Joseph Island

recreational use on these three islands will not be uniform, although they will receive much greater increases in use and development pressure than will the remaining islands. This pressure will be the result of their attractiveness as recreational resources and, in the case of Galveston Island and Mustang-North Padre Island, the result of their proximity to growing metropolitan centers.

The fact that the development called for in Padre Island National Seashore's master plan is as yet incomplete supports the assumption that as it is developed, increased usage can be expected. However, it is unreasonable to expect the same intensity of use and development as that anticipated on the three islands in the high intensity category. The future of Matagorda Island is more uncertain than that of Padre Island National Seashore. Regardless of whether the State or Federal government obtains control of the abandoned military base, or even if a compromise is reached, the agencies involved will plan to attract greater numbers of visitors. It is for this reason that Matagorda Island is categorized under medium use and development intensity.

St. Joseph Island currently has the fewest alternatives as a recreational resource of all the barrier islands. It currently receives very little use of any type. Unless some unforeseen and dramatic event occurs, it can be anticipated that St. Joseph Island will remain the least used and developed island along the Texas coast.

This paper would not be complete without formulating implications for future management of the Texas barrier islands as recreational

resources. Considering that: 1) large tracts of as yet undeveloped land exist on every barrier island; 2) pressure for recreational use and development of these undeveloped areas will undoubtedly increase; and 3) the unique natural characteristics of the barrier islands dictate that certain uses are more easily sustained by the resource than others, the opportunity exists to proceed into the future avoiding the traditionally unplanned, haphazard allocation of resources that has occurred in the past. The information gathered here helps prepare for this opportunity by providing an understanding of the important parameters that must be considered in recreational resource management decisions on the barrier islands. This information is as applicable to the public sector's management of natural resources as it is to the private sector's management of human and investment resources. Of course, the final resource allocation decisions will be made on an island by island basis, considering local and regional priorities. However, in the case of the Texas barrier islands, it is possible to consider their future use and development in a planned, comprehensive manner. This is most important since in the final analysis the very attributes which make the islands so attractive for recreation, also make them extremely sensitive to the use they attract.

CHAPTER V

UPDATE OF RECENT DEVELOPMENTS

Galveston Island

On March 2, 1978, the Galveston City Council banned vehicles from Galveston Island west beach. The ban took effect on June 21 according to Mayor John Unbehagen "in the interest of public safety". Many have argued that vehicles on state beaches have been creating problems for some time, that driving cars through large concentrations of people poses a threat to those people and that as beaches near urban areas have become more congested, disturbances have become more prevalent.

Opposition to the ban has been widespread. State Senator A. R. Schwartz has been a vocal critic of Galveston's decision. Schwartz objected to the ban because of the restrictions it imposes on potential users. He has argued that beach access is limited by the number of parking spaces available, the cost of some of those spaces, the location of parking lots, and the distance to the beach. Some opponents claimed that the ban was in violation of the Texas Open Beaches Act, but an initial opinion by an Assistant Attorney General stated that the Galveston plan does not appear to result in a "factual deprivation" of public access to the beach. Other objections came from some Galveston merchants who claimed that the vehicle ban has decreased their business, in some cases by as much as two-thirds.

The City of Galveston provided about half of the 5,500 parking spaces that were available when the beach was closed to traffic. Twelve access points have been provided for beach users to get to the beach. The other parking spaces were provided by the private sector. Private investment in parking facilities is being encouraged by the city in order to increase access to the beach.

The Galveston beach will remain closed to traffic from March 15 to September 1 each year. Other coastal towns are considering similar actions. Crystal Beach, a small town near Galveston, has closed a section of its beach to vehicles as a pilot program. According to Mayor Bob Brannan, Surfside considered a vehicle ban, but ran into strong opposition. Here, a citizens' committee is considering alternative ways of controlling traffic.

Mustang Islang State Park, which is expected to open by August of 1979, will ban driving on 2.3 miles of beach. County commissioners approved the ban in 1975 despite protests from some citizens.

Matagorda Island

The Air Force closed its facilities on Matagorda Island and declared it to be surplus property in July of 1975. The General Services Administration took control of the island and subsequently leased it to the Department of the Interior from July 1, 1978 to June 30, 1979. During that lease period, Matagorda Island is to be open to the public for recreation. The Department of the Interior has wanted control of the island for some time because of its proximity to the Aransas National Wildlife Refuge.

The Texas Parks and Wildlife Department has also wanted to manage Matagorda Island for years. They would like to use at least part of the barrier island as a state park. The State of Texas already owns the tidal marshlands at the lower end of the island.

After long negotiations, an agreement was reached in January 1979 on the disposition of state and federal lands on Matagorda Island. The State of Texas will receive 19,000 acres of land, 10,000 of which will be converted into a state park. State-owned tidal marshlands will be made available to the U.S. Fish and Wildlife Service to manage as part of the Aransas National Wildlife Refuge. While Whooping Cranes are wintering in Texas, the lands and marshes adjacent to the Wildlife Refuge will probably be closed to the public. Access to the island will continue to be by boat.

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APPENDICES*

*The monthly and annual traffic flow figures which follow were generated by manipulating average daily traffic counts received from the state and county agencies noted with each graph. The traffic flow represents vehicles crossing the causeways, bridges, and ferries in both directions, i.e., two-way traffic.

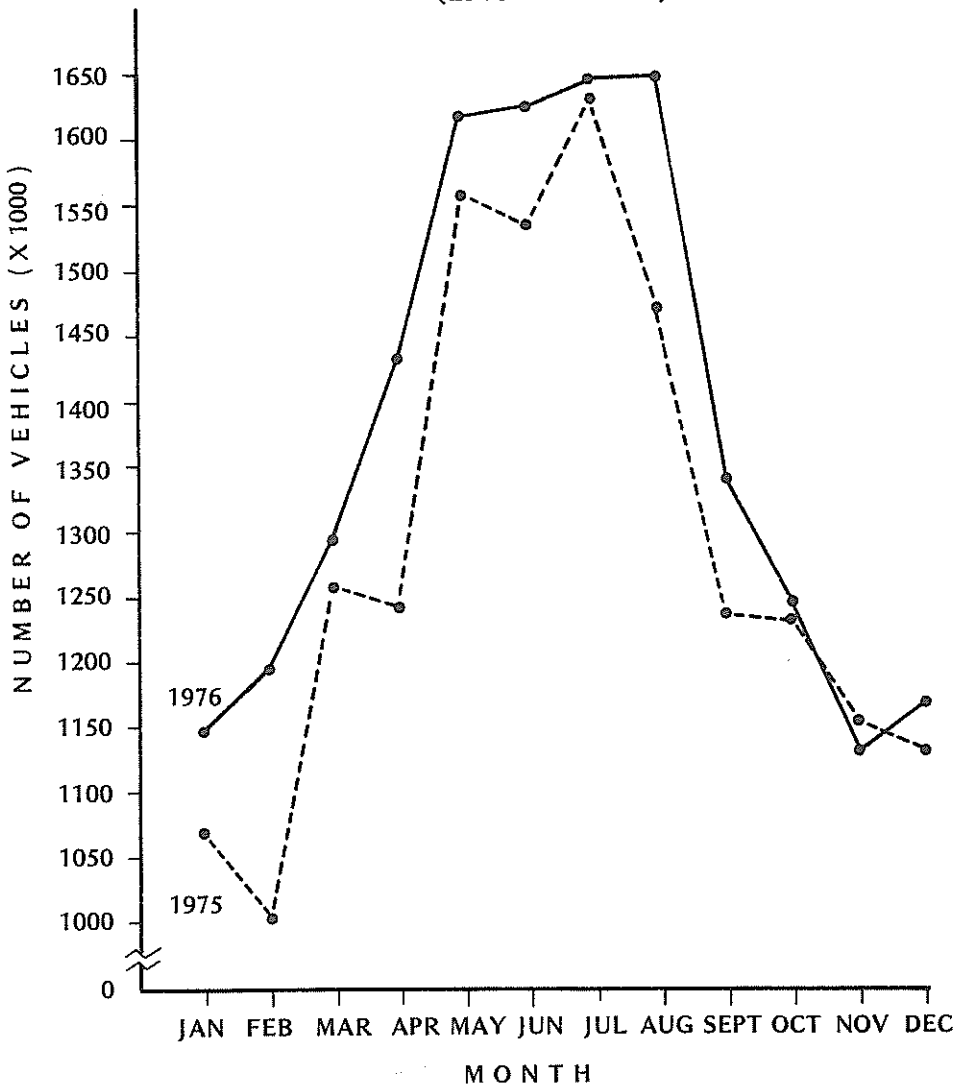
Appendix A

Galveston Island

I-45 Causeway, Bolivar Ferry, and

San Luis Pass Toll Bridge

(1975 and 1976)



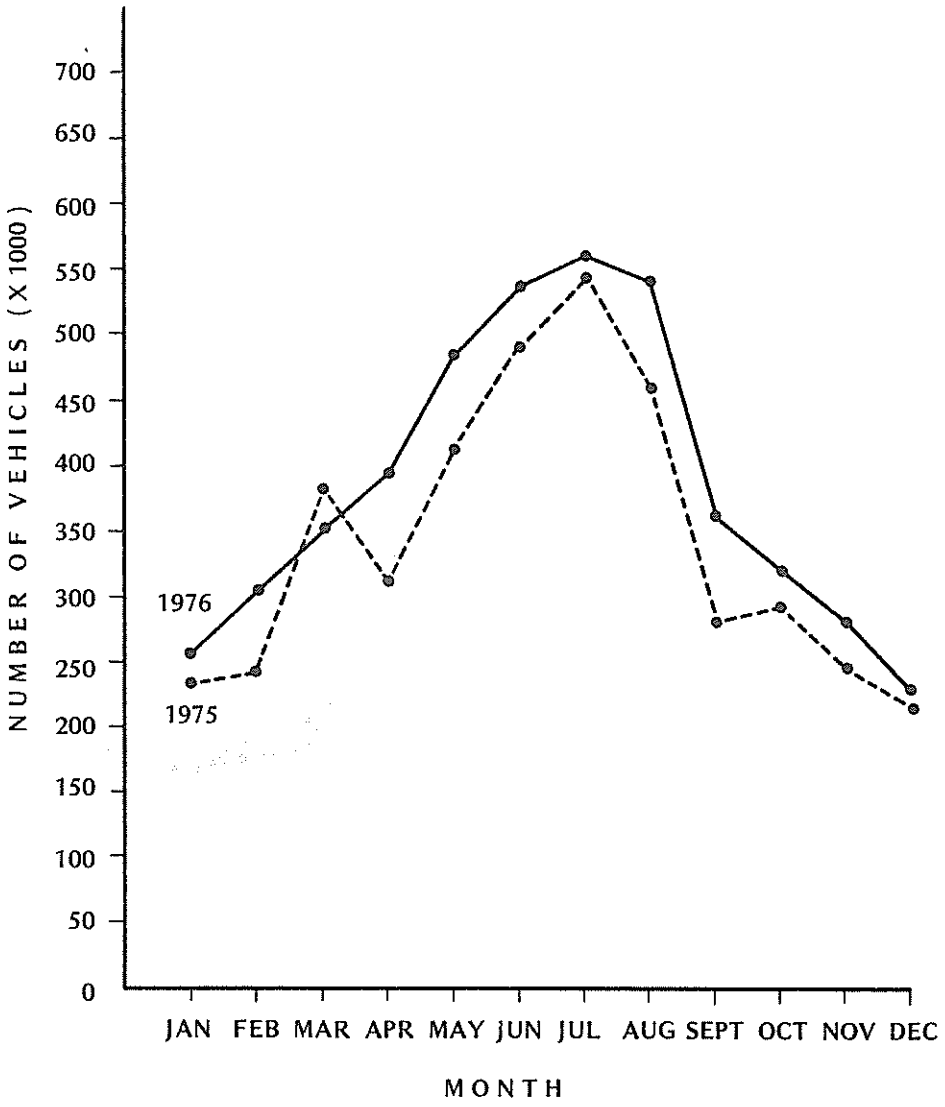
Source: Texas Department of Highways and Public Transportation and Galveston County Roads District

Appendix B

Mustang-North Padre Island

JFK Causeway and Port Aransas Ferry

(1975 and 1976)



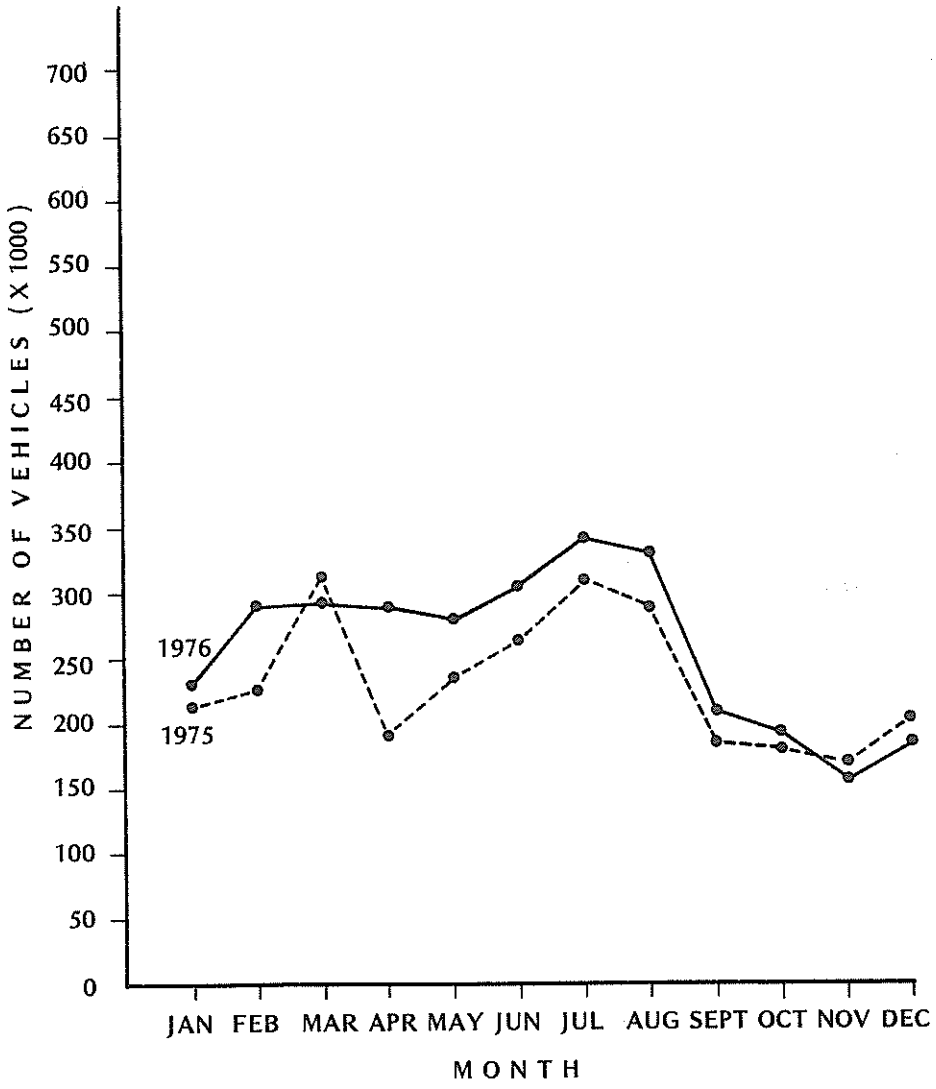
Source: Texas Department of Highways and Public Transportation

Appendix C

South Padre Island

Queen Isabella Causeway

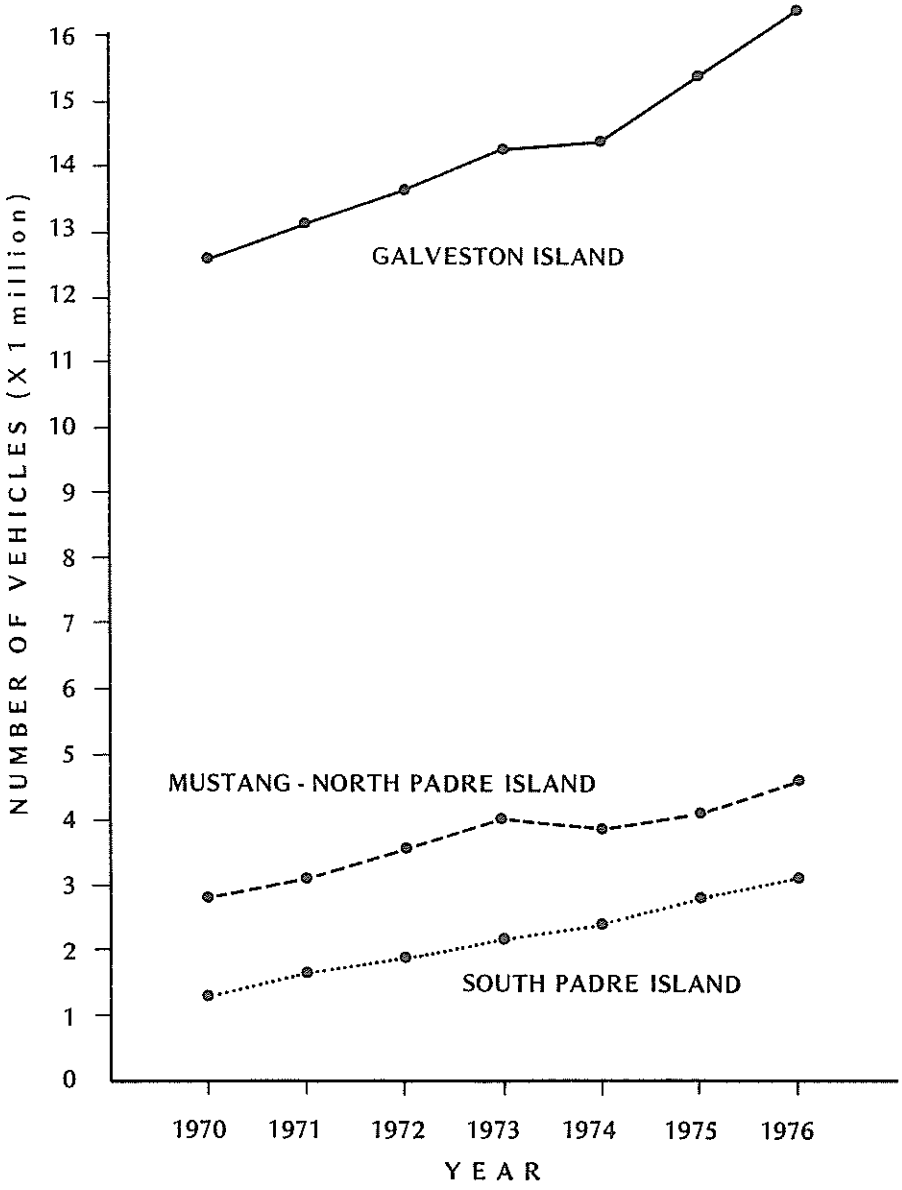
(1975 and 1976)



Source: Texas Department of Highways and Public Transportation

Appendix D Estimated Annual Two-Way Traffic Counts

(1970 through 1976)



Source: Texas Department of Highways and Public Transportation